EXTENT AND COST OF WEED CONTROL WITH HERBICIDES AND AN EVALUATION OF IMPORTANT WEEDS, 1968

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This report updates ARS 34-102, "Extent and Cost of Weed Control with Herbicides and an Evaluation of Important Weeds, 1965," issued in 1968.

PREFACE

This publication, the fourth of a series of reports that has appeared during the last 10 years, updates the information on the extent and cost of weed control with herbicides in the United States to 1968. It also contains evaluations of important weeds. These evaluations are much more comprehensive than those in any of the three preceding publications. Thus, this publication represents the most recent evaluation of the current status of herbicide usage in all States and the important weeds against which herbicides are directed. In conjunction with summary data from the earlier publications, it serves as a prospectus of chemical weed control for the immediate future.

The four publications in this series have each been based on surveys during specified years--1959, 1962, 1965, and 1968, respectively. In each instance, questionnaires were prepared and distributed to State weed specialists at the end of the year that was being surveyed. For the first three surveys, a minimum of 2 years was required to gather, process and then release the data in published form. This 1968 survey has required almost 3 years.

Two main factors contributed to the additional year's delay in publication of this report: first, obvious misinterpretation of certain key questions on treated acreages by a few contributing weed specialists required a resurvey of all contributors to ensure accuracy and uniformity in data; second, the expanded coverage of the survey increased the volume of work involved. However, the reconciled data corrected several deficiencies in the earlier publications and now reflect more accurately recent expansions in weed control technology.

The data presented are critically needed by public and private agencies and individuals for planning research, development, regulatory, and educational programs, and for evaluating the economics of chemical weed control.

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EXTENT AND COST OF WEED CONTROL WITH HERBICIDES AND AN EVALUATION OF IMPORTANT WEEDS, 1968[1]

INTRODUCTION

For ages, the figure of a man with a hoe has symbolized the farmer. A better symbol would be difficult to find. To the farmer, probably no effort in crop production is more universal or more characteristic than his constant battle with weeds. The hoe symbolizes this effort.

Until a generation ago, the farmer's solution to his weed problems had been a relatively straightforward attack with physical force. His weapons were tillage implements, mowing, and even his hands or handtools. Herbicides have greatly increased the farmer's ability to control weeds. At the same time, herbicides have complemented other adjustments in crop production technology and are needed to replace the diminishing supply of farm labor. Weed control with herbicides continues to fit into the scheme of increased mechanization of agriculture. However, with the advances in weed control systems have come changes in the weed problems--the enemy has also changed tactics!

The dramatically effective and selective herbicide 2,4-D was the first organic herbicide widely adopted by farmers for killing weedy broadleaf vegetation in grain crops, pastures, and other areas. However, 2,4-D was no panacea. Tolerant broadleaf weeds and resistant grasses survived treatment and increased in numbers. Wherever individual herbicides have been widely used over a period of years, tolerant weeds have increased--particularly where cultivation and hand hoeing were not practiced as in the past. It is evident that no single herbicide is sufficient and that our weed problems constantly change.

The U.S. Department of Agriculture recognizes that all measures for controlling weeds must be used to reduce losses in crop production. Integrated weed control programs must include time-tested control measures, such as cultivation, mowing, burning, use of weed-free seed, crop rotation, and fertilizer practices, as well as herbicide control measures. Some biological controls have been developed and integrated into the programs; others are being developed. In the foreseeable future, however, herbicides will continue to hold the greatest promise for checking and reducing the losses caused by weeds in many programs of production. The current survey has been designed to provide more precise basic information on the economics, costs, and effectiveness of herbicides and the weeds against which they are used.

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[1]Information was compiled by L. L. Jansen, L. L. Danielson, W. B. Ennis, Jr., P. A. Frank, J. T. Holstun, Jr., and D. L. Klingman, Agricultural Research Service; J. R. Paulling and R. A. Wearne, Extension Service; and A. S. Fox, Economic Research Service, U.S. Department of Agriculture. Information was supplied by specialists in the Cooperative State Extension Services and in the State Agricultural Experiment Stations.

Today we have a growing force of chemically armed farmers, advised by a dedicated group of trained weed specialists. Their efforts against weeds are aided by an efficient staff of industrial organizations, weed scientists, and teachers who provide needed materials, new and improved methods, and trained personnel for replacement and expansion. However, achievement of desired goals--effective allocation of weed control efforts, maximum utilization of energies, and economy and safety of operation--depends upon constant reappraisal of progress on old problems and definition of new problems. This report provides a basis for assessing these needs.

These results of the fourth survey on the extent and cost of weed control with herbicides offer an updated evaluation of some of the more important weed problems. Previous surveys had been made in 1959, 1962, and 1965; the present survey was conducted during 1968. The data are especially important in establishing trends in usage, costs, effectiveness, areas of application, and intensification of problems.

Analysis of trends and new evaluations of specific problems can help us focus attention on problems of greatest importance. What are the costs? What costs are becoming critical? In what crops and geographical areas are the needs for better control of weeds most pressing? In which crops should we develop better alternative treatments? Where do residue hazards exist? Are we directing our efforts against the most important weeds? How important are certain weeds nationally, regionally, Statewise, cropwise? These are only a few of the questions for which some answers may be forthcoming to help map future strategy. This fourth survey provides our best overall appraisal of the extent and costs of weed control and extended insight into the status of important weed problems.

This study was made possible by the close cooperation of State research and extension workers and three agencies of the U.S. Department of Agriculture: the Economic Research Service, the Agricultural Research Service, and the Extension Service. All shared in planning the study and in writing the report.

GENERAL LIMITATIONS

Tabular data and associated discussions in this report are based on information provided in returned questionnaires.

In 1968, specialists reported the acreages treated with herbicides in three categories: (1) areas treated by preemergence methods only; (2) areas treated by postemergence methods only; and (3) areas which received combinations of both preemergence and postemergence treatments (a new category).[2] The total land area treated with herbicides in 1968 is the sum of the three categories. In the earlier years, only two categories were distinguished, and the total land area treated was actually less than the sum of the acreages of the two. Acreages treated by combinations of preemergence and

[2]Preemergence--before emergence of specified weed or crop; postemergence --after emergence of specified weed or crop.

postemergence methods were counted twice, once in each category. The total acerage figures reported for 1959, 1962, and 1965 were correct only for acreages treated but did not reflect the true land area involved.

Some crops are grown in only a few States. Some States did not report on a specific crop, although the crop was grown. In several instances, reports were received on specific weed problems but not on associated costs and the extent of weed control. Consequently, the number of States reporting on different aspects of problems in a crop or area varies. Regional and national averages, totals, and percentages in the summary tables were calculated from the individual reports and weighted for acreages involved.

Persistence problems discussed in this report have been limited to soil persistence, except for persistence in the water of treated aquatic areas. Figures tabulated on persistence problems reflect the number of "yes" or "no" replies to the question "Are herbicidal residues in the soil becoming a problem?" Positive replies are interpreted as indicating that herbicidally active residues persist in the soil (or water) for a sufficient period of time to injure either the crop to which applied or succeeding crops, or otherwise to interfere with traditional programs of cropping, land management, or water use. For each positive reply, State specialists also estimated the percentage of the crop acreage that was affected by residue problems in 1968. Herbicides that persist in the soil do not necessarily cause other environmental contamination, and many residue problems are resolved by adjusting the crop rotations.

Data were not available for providing quantitative answers to several questions. In these instances, reporting specialists used their best judgment in making estimates.

These general limitations should be considered in interpreting this report. References are made to other specific limitations at appropriate places.

PURPOSE OF THE SURVEY AND PROCEDURE

The primary objectives of this survey were to update previous information on chemical control of weeds and to identify more exactly the extent and status of the major weed problems that contribute to the losses and costs of agriculture. The data have been evaluated and presented in a form suited to the varied requirements of both public and private agencies for program reviews and analyses. The report provides a source of information useful for establishing priorities in short-term and long-range research planning, for implementing research, development, regulatory, and educational programs, and for effectively guiding the leadership efforts of extension personnel.

National and international emphasis on world food problems recognizes the importance of weed control in crop production. The avoidance of damage to the environment continues to be a foremost consideration in the application of herbicide technology to achieve more efficient agricultural production. As agricultural technology advances to provide higher levels of production, any

factor that limits or reduces yields becomes increasingly important. Information on weed control--one of the major and most costly inputs in time, energy, and materials in crop production--must be updated continually to keep abreast of other developments.

The questionnaire used in the current survey (conducted in 1968) followed the general format of questionnaires used in earlier surveys.[3,4,5] Questions covered items that provide consolidated information on:

(1) The costs of herbicidal control measures, the extent of their use in different crop or noncrop situations, their effectiveness, usage trends, and residue problems, and
(2) The relative importance of specific weeds as major problems with respect to their geographical distributions and the extent and trends of their infestations in individual crop or noncrop situations.

The Extension Service supervised the distribution of the questionnaires to extension specialists charged with educational leadership in weed control in the 50 States. Each specialist was asked to assume responsibility for the reports from his State but was requested to solicit support from all staff members who could contribute to a sound appraisal of the weed problems. Separate reports were requested for each of the crop or noncrop situations covered in the tables. The number of crops and other situations was expanded from the 28 covered in 1965 to 49 in 1968. Reports were received from all 50 States. Results were more complete for the fourth survey than for any previous one.

The Economic Research Service tabulated the information. Weed specialists in the Agricultural Research Service interpreted and evaluated the summarized information for each of the crop or other situations surveyed. In most instances, State specialists reported the weeds by the names approved by the Weed Science Society of America. Some colloquial names were changed to approved common names or to common names given in standard reference volumes. Binomial nomenclature for most of the common names can be found in the Appendix.

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[3]Agricultural Research Service and Federal Extension Service, U.S. Department of Agriculture. A survey of extent and cost of weed control and specific weed problems. ARS 34-23. 1962.

[4]Agricultural Research Service and Federal Extension Service, U.S. Department of Agriculture. A survey of extent and cost of weed control and specific weed problems. ARS 34-23-1. 1965.

[5]Agricultural Research Service, Federal Extension Service, and Economic Research Service, U.S. Department of Agriculture. Extent and cost of weed control with herbicides and an evaluation of important weeds, 1965. ARS 34-102. 1968.

CHEMICAL WEED CONTROL BY FARMERS

(See General Limitations)

The use of herbicides continues to increase in the United States. In 1968, over 150 million acres were treated with herbicides as compared with 120 million acres in 1965, over 70 million acres in 1962, and 53 million acres in 1959 (table 1). The largest increases in acreages since 1965 were on land devoted to the cultivation of corn, small grains, cotton, soybeans, and sorghum.

Although much of the earlier increase resulted from using larger quantities of such older organic herbicides as 2,4-D,[6] a considerable part of the recent increase was due to the use of some more-recently developed herbicides, such as atrazine, trifluralin, and chloramben.[7] Many of the newer herbicides possess various properties that make them useful for controlling many species of weeds or for controlling specific weeds in particular crops and under different soil and climatic conditions.

Herbicidal control of weeds is an essential part of improved crop production technology that also includes the use of fertilizers, improved crop varieties, and larger and newer types of machinery and equipment. Many of the recent developments have reduced labor requirements (fig. 1) and at the same time increased the attractiveness of using more herbicides. The use of herbicides helps to reduce the risk of weeds that cannot be controlled because of unfavorable weather conditions. For example, the use of herbicides as preemergence treatments allows the grower several opportunities to control weeds. If the preemergence application is not effective, he still has the alternatives of using herbicides as postemergence treatments, or cultivation, or both.

The use of herbicides alone or combined with other methods of weed control offers unusual promise for increasing crop yields. Effective weed control also improves crop quality and reduces costs of harvesting and processing the crop.

Herbicide use affects overall crop production patterns in the choice of crops grown and the variety of crops planted. It influences seedbed preparation, methods of seeding, seeding rates, row spacing, plant spacing in the row, and plant populations per acre. It facilitates the modification of associated fertilizer practices, which include the type of fertilizer used, the time of application, and the placement of fertilizer. More directly, the use of herbicides affects the cultivation practices, such as the number and type of cultivations. The use of herbicides also facilitates irrigation practices, harvesting procedures, seed cleaning operations, erosion control, and fallow

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[6] (2,4-dichlorophenoxy)acetic acid.

[7] 2-chloro-4-(ethylamino)-6-(isopropylamino)-s-triazine (atrazine), α,α,α-trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine (trifluralin), and 3-amino-2,5-dichlorobenzoic acid (chloramben).

Table 1.--Estimated extent of chemical weed control in the United States, 1959, 1962, 1965, and 1968

Crop or area	Acres treated							
	Total number 1/				Percent of total acres 2/			
	1959	1962	1965	1968 3/	1959	1962	1965	1968
	1,000 acres				Percent			
Corn	20,051	25,302	45,012	48,930	25	39	68	76
Cotton	1,554	5,433	12,479	9,245	10	35	92	91
Sorghum	2,093	2,665	5,391	7,363	14	23	32	42
Soybeans	556	2,827	7,832	22,302	2	10	23	55
All small grains	20,723	18,931	28,735	35,949	22	24	36	43
Wheat	---	---	---	(21,255)	--	--	--	38
Other small grains	---	---	---	(14,694)	--	--	--	53
Rice	502	940	1,390	1,920	32	53	78	82
Tobacco	---	---	---	72	--	--	--	8
Peanuts	35	310	797	1,270	2	22	55	88
Sugarbeets	125	362	495	850	14	33	40	60
Sugarcane	---	---	---	582	--	--	--	95
All forage seeds	282	439	221	458	8	16	9	25
Legume seeds	---	---	---	(246)	--	--	--	18
Grass seeds	---	---	---	(212)	--	--	--	40
Sweet corn	---	30	308	461	--	5	56	66
Other vegetables 4/	276	1,164	779	2,313	10	18	13	36
Fruits and nuts	10	267	540	2,941	5	10	19	96
Ornamentals	2	51	84	89	1	25	40	5/ 43
Lawns	60	672	1,134	3,826	1	5	14	5/ 19
Hay	272	412	1,269	1,276	6/	6/	2	2
Pastures 7/	2,400	4,714	6,671	4,685	6/	2	2	5/ 2
Rangeland 8/	2,011	2,262	3,156	4,373	6/	6/	6/	5/ 6/
Forest plantings	---	274	117	463	--	--	--	--
Noncropland	1,971	3,612	3,306	1,659	--	--	--	--
Aquatics	---	---	84	216	--	--	--	--
Total	52,923	70,667	119,800	151,243	--	--	--	--

1/ Data for 1959, 1962, and 1965 include acres treated preemergence plus acres treated postemergence; those acres treated both preemergence and postemergence are counted twice. This double counting lowers the average cost per acre (see table 2). In 1968, acres treated both preemergence and postemergence were reported separately from acres treated preemergence only or postemergence only.

2/ Harvested acreage where crops were harvested (see table 4 for 1968).

3/ Numbers in parentheses not included in total because of duplication. Information for sugarcane and tobacco was not available for earlier years.

4/ Root crops, cucurbits, vegetable legumes, vegetables, and vegetable seed crops other than sweet corn. Information was reported for more vegetables in 1968 than in earlier years. See individual tables for vegetables included in this report.

5/ Estimated.

6/ Less than 1 percent.

7/ Annual, perennial improved, and perennial unimproved. See individual tables for more detailed information.

8/ Mountain, prairie, arid, and rainbelt. See individual tables for more detailed information.

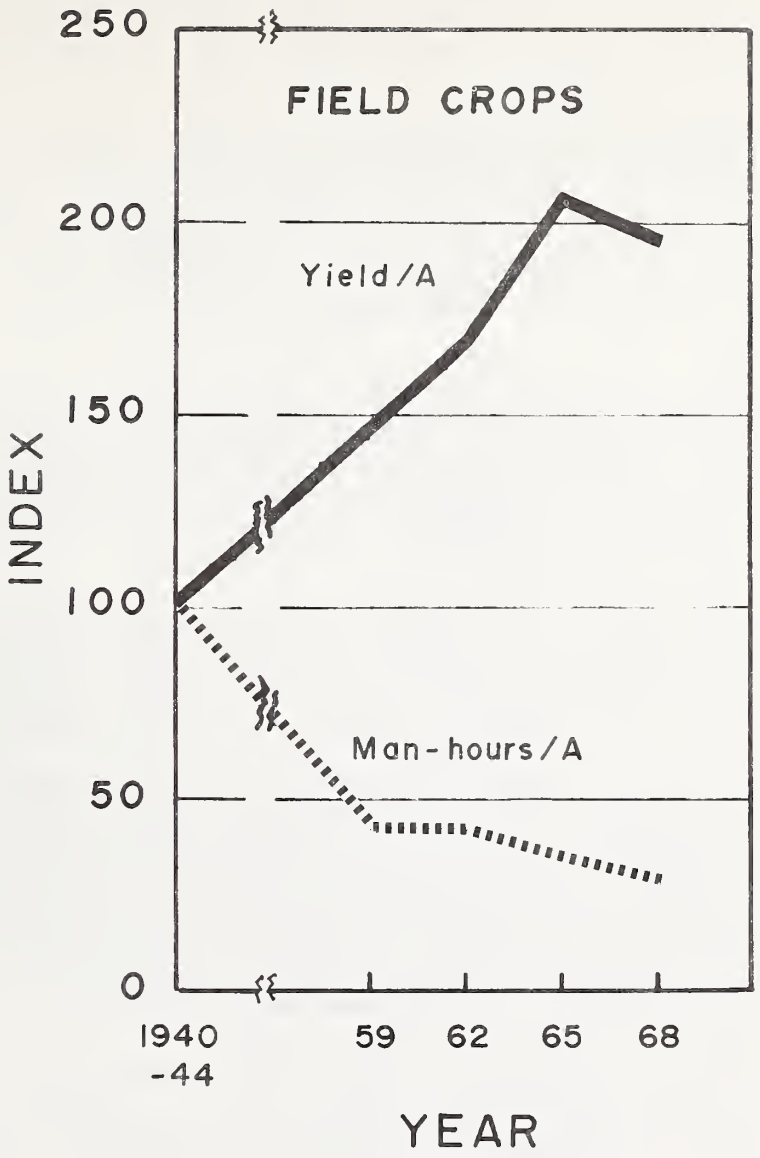

Figure 1. Effects of agricultural technology on productivity and labor requirements in field crop production since 1940-44; index values weighted for harvested acres of food and feed grains, oil crops, sugar crops, cotton, and tobacco; 1940-44 index=100. (Based on data from Agricultural Statistics, 1954 and 1970.)

practices for weed control. In addition, the extensive use of herbicides helps to improve disease and insect control and land and equipment use.

Weed specialists estimated that farmers treated 26 percent more acres in 1968 than in 1965, and that the directly related costs of materials and the cost of application for all herbicide treatments increased about 68 percent. Average costs per acre increased 35 percent, from $4.12 to $5.55 per acre

(table 2). In 1968 costs ranged from slightly more than $2 per acre for treatments on small grains to more than $20 per acre for treatments on lawns, ornamentals, and aquatic areas.

Farmers generally treated most of the acreages themselves. This was especially true for the more important row crops--corn, cotton, soybeans, and sorghum--as well as for fruits, nuts, and most vegetables. Large acreages of small grains and rangeland were often treated by aircraft that are generally owned and furnished by custom operators. Some specialty crops, e.g., rice (which requires flooding and irrigation), are conventionally treated by aircraft (table 3).

Preemergence use of herbicides continued to grow in importance. Acreage treated preemergence constituted slightly less than 8 percent of the total treated acreage of all crops in 1959, while in 1968, 34 percent was treated preemergence only, and 16 percent both preemergence and postemergence (table 4). The increase in preemergence treatments was especially noticeable on such crops as corn and soybeans.

Herbicides were still used extensively as postemergence treatments. This usage accounted for about one-half of the acres treated with all herbicides. It accounted for nearly all of the treated small grain acreage, and for most of the treated acreages of pasture, rangeland, and noncropland.

The average cost per acre of application and materials for herbicides used premergence alone was almost twice as much as for those used postemergence alone (table 5). Most of this difference resulted from higher costs or higher rates (or both) of materials for preemergence weed control, particularly on corn, cotton, sorghum, and soybeans. On vegetables, ornamentals, and fruit and nut crops, differences between the costs of using herbicides preemergence and postemergence were not as great. However, preemergence use of herbicides was generally more expensive than postemergence treatments.

Weed specialists reported that the herbicides available were effective in controlling many weeds in numerous crops (table 6). However, reports from many States indicated an urgent need for better herbicides on certain crops, particularly soybeans, sugarbeets, vegetables, ornamentals, hay, and pasture (table 7).

Specialists indicated some significant problems arising from herbicide residues in soils or aquatic areas. Persistence problems were noticed particularly on corn, sorghum, tobacco, sweet corn, and ornamentals. There appeared to be little difficulty with persistence of herbicides on small grains, rice, sugarcane, and pasture and rangelands (table 7).

Overall trends of herbicide use continued upward (table 7). Specialists in a few States reported that in 1968 the use of herbicides was lower on some crops than that reported in previous studies.

Table 2.--Estimated cost of chemical weed control in the United States, 1959, 1962, 1965, and 1968

Crop or area	Cost of herbicides including cost of application and materials for all treatments							
	Total				Average per acre			
	1959	1962	1965	1968 1/	1959	1962	1965	1968
	1,000 dollars				Dollars			
Corn	37,980	57,600	144,267	204,483	1.89	2.28	3.21	4.18
Cotton	4,709	16,805	59,678	89,342	3.03	3.09	4.78	9.66
Sorghum	6,512	5,258	22,121	33,841	3.11	1.97	4.10	4.60
Soybeans	2,315	10,835	35,249	124,402	4.16	3.83	4.50	5.58
All small grains	37,095	29,579	53,375	78,442	1.79	1.56	1.86	2.18
Wheat	---	---	---	(47,610)	---	---	---	2.24
Other small grains	---	---	---	(30,832)	---	---	---	2.10
Rice	889	6,250	12,638	21,935	1.77	6.65	9.09	11.42
Tobacco	---	---	---	835	---	---	---	11.68
Peanuts	116	2,565	6,337	12,493	3.31	8.27	7.95	9.84
Sugarbeets	625	2,237	4,179	8,146	5.00	6.18	8.44	9.58
Sugarcane	---	---	---	8,617	---	---	---	14.81
All forage seeds	1,868	2,416	1,527	3,438	6.62	5.50	6.91	7.51
Legume seeds	---	---	---	(2,026)	---	---	---	8.24
Grass seeds	---	---	---	(1,412)	---	---	---	6.66
Sweet corn	---	187	1,750	2,790	---	6.23	5.68	6.05
Other vegetables 2/	1,418	10,415	7,969	24,476	5.14	8.95	10.23	10.58
Fruits and nuts	98	2,397	7,029	29,720	9.80	8.98	13.02	10.11
Ornamentals	45	969	1,743	1,810	22.50	19.00	20.75	20.26
Lawns	1,489	15,368	26,750	112,708	24.82	22.87	23.59	29.46
Hay	1,692	1,794	5,224	7,697	6.22	4.35	4.12	6.03
Pastures 3/	5,789	13,340	16,551	13,700	2.41	2.83	2.48	2.92
Rangeland 4/	6,174	6,265	15,748	22,736	3.07	2.77	4.99	5.20
Forest plantings	---	2,752	1,492	6,175	---	10.04	12.75	13.35
Noncropland	19,738	83,714	68,470	26,785	10.01	23.18	20.71	16.15
Aquatics	---	---	1,922	4,422	---	---	22.88	20.50
Total or average	128,552	270,746	494,019	838,993	2.43	3.83	4.12	5.55

1/ Numbers in parentheses not included in total because of duplication. Information for sugarcane and tobacco was not available for earlier years.

2/ Root crops, cucurbits, vegetable legumes, vegetables, and vegetable seed crops other than sweet corn. Information was reported for more vegetables in 1968 than in earlier years. See individual tables for vegetables included in this report.

3/ Annual, perennial improved, and perennial unimproved. See individual tables for more detailed information.

4/ Mountain, prairie, arid, and rainbelt. See individual tables for more detailed information.

Table 3.--Estimated extent and cost of chemical weed control in the United States, 1968

Crop or area 1/	States reporting	Acres treated		Total cost, all acres treated	Average cost per acre	Acres treated by	
		Total number	Percent of total acres 2/			Farmers	Custom
	Number	1,000 acres	Percent	1,000 dollars	Dollars	Percent	Percent
Corn	48	48,930	76.1	204,483	4.18	76	24
Cotton	18	9,245	91.0	89,342	9.66	64	36
Sorghum	27	7,363	42.2	33,841	4.60	63	37
Soybeans	30	22,302	54.9	124,402	5.58	84	16
Wheat	38	21,255	38.4	47,610	2.24	54	46
Other small grains	45	14,694	52.6	30,832	2.10	62	38
Rice	5	1,920	81.6	21,935	11.42	13	87
Tobacco 3/	12	72	8.1	835	11.68	94	6
Peanuts	9	1,270	88.4	12,493	9.84	84	16
Sugarbeets	17	850	60.0	8,146	9.58	78	22
Sugarcane 3/	3	582	95.0	8,617	14.81	90	10
Legume seeds	19	246	18.4	2,026	8.24	69	31
Grass seeds	13	212	40.2	1,412	6.66	76	24
Sweet corn	31	461	65.6	2,790	6.05	65	35
Other vegetables 4/	48	2,313	35.9	24,476	10.58	70	30
Fruit and nuts	38	2,941	95.9	29,720	10.11	85	15
Ornamentals	26	89	5/ 42.5	1,810	20.26	71	29
Lawns	39	3,826	5/ 19.1	112,708	29.46	79	21
Hay	37	1,276	2.0	7,697	6.03	76	24
Pastures 4/	41	4,685	2.0	13,700	2.92	74	26
Rangeland 7/	18	4,373	1.0	22,736	5.20	17	83
Forest plantings	22	463	---	6,175	13.35	58	42
Noncropland	27	1,659	---	26,785	16.15	48	52
Aquatic areas	20	216	---	4,422	20.50	25	75
All crops	50	151,243	---	838,993	5.55	--	--

1/ Does not include flax or summer fallow.
2/ Harvested acreage where crops were harvested. See table 4.
3/ Tobacco and sugarcane are not included in table 1.
4/ Root crops, cucurbits, vegetable legumes, vegetable seed crops, solanaceous crops, and all vegetables except sweet corn. See individual tables.
5/ Estimated.
6/ Annual, perennial improved, and perennial unimproved. See individual tables for more detailed information.
7/ Mountain, prairie, arid, and rainbelt. See individual tables for more detailed information.

Table 4.--Estimated extent of chemical weed control in the United States, 1968

Crop or area	Total harvested acres 1/	Acres treated			Acres treated as percent of total		
		Pre-emergence only	Post-emergence only	Pre- + post-emergence	Pre-emergence only	Post-emergence only	Pre- + post-emergence
	1,000 acres				Percent		
Corn	64,263	20,415	18,887	9,628	31.8	29.4	15.0
Cotton	10,160	3,450	1,183	4,612	34.0	11.6	45.4
Sorghum	17,429	2,882	4,014	467	16.5	23.0	2.7
Soybeans	40,659	15,543	1,624	5,135	38.2	4.0	12.6
Wheat	55,309	584	20,331	340	1.1	36.8	.6
Other small grains (oats, barley, rye)	27,931	473	12,864	1,357	1.7	46.1	4.9
Rice	2,353	15	1,890	15	.6	80.3	.6
Tobacco 2/	880	23	48	1	2.6	5.5	3/
Peanuts	1,436	844	169	257	58.8	11.8	17.9
Sugarbeets	1,417	635	125	90	44.8	8.8	6.4
Sugarcane 2/	613	118	271	193	19.3	44.2	31.5
Legume seeds	1,336	77	165	4	5.8	12.4	.3
Grass seeds	527	153	56	3	29.0	10.6	.6
Sweet corn	703	309	109	43	44.0	15.5	6.1
Other vegetables 4/	6,446	1,633	411	269	25.3	6.4	4.2
Fruits and nuts	3,065	2,166	487	287	70.7	15.9	9.4
Ornamentals	210 5/	58	25	6	5/27.5	5/12.0	5/3.0
Lawns	20,000 5/	893	2,455	478	5/4.5	5/12.3	5/2.4
Hay	62,570	202	918	156	.3	1.5	.2
Pastures 6/	310,000 5/	225	4,300	160	5/.1	5/1.4	5/.1
Rangeland 7/	630,000 5/	---	4,373	---	---	5/.1	---
Forest plantings	---	53	399	11	---	---	---
Noncropland	---	138	1,520	1	---	---	---
Aquatic areas	---	17	199	---	---	---	---
Total	---	50,906	76,823	23,513	---	---	---

1/ Harvested acreage where crops were harvested. From Agricultural Statistics, 1969.
2/ Tobacco and sugarcane are not included in table 1.
3/ Less than .05.
4/ Root crops, cucurbits, vegetable legumes, vegetable seed crops, solanaceous crops, and all vegetables except sweet corn. See individual tables.
5/ Estimated.
6/ Annual, perennial improved, and perennial unimproved. See individual tables for more detailed information.
7/ Mountain, prairie, arid, and rainbelt. See individual tables for more detailed information.

Table 5.--Estimated cost of chemical weed control in the United States, 1968
(Costs are for herbicides and application)

Crop or area	Total cost 1/			Average cost per acre 2/		
	Pre-emergence only	Post-emergence only	Pre- + Post-emergence	Pre-emergence only	Post-emergence only	Pre- + Post-emergence
	1,000 dollars			Dollars		
Corn	98,809	46,462	59,212	4.84	2.46	6.15
Cotton	22,563	5,347	61,432	6.54	4.52	13.32
Sorghum	18,157	12,042	3,643	6.30	3.00	7.80
Soybeans	83,155	4,840	36,407	5.36	2.95	6.72
Wheat	2,208	44,322	1,081	3.78	2.18	3.18
Other small grains	2,091	25,213	3,528	4.42	1.96	2.60
Rice	240	21,395	300	16.00	11.32	20.00
Tobacco 3/	207	623	5	9.16	12.85	13.00
Peanuts	8,204	992	3,297	9.72	5.87	12.83
Sugarbeets	6,020	866	1,260	9.48	6.93	14.00
Sugarcane 3/	2,174	3,618	2,826	18.42	13.35	14.64
Legume seeds	611	1,360	55	7.94	8.24	13.75
Grass seeds	1,215	177	20	7.94	3.16	6.67
Sweet corn	2,063	430	297	6.67	3.94	6.96
Other vegetables 4/	16,648	2,892	4,936	10.20	7.04	18.35
Fruit and nuts	18,278	6,284	5,158	8.44	12.90	17.95
Ornamentals	1,220	467	123	21.10	18.38	20.16
Lawns	37,081	41,908	33,718	41.52	17.07	70.54
Hay	1,489	4,563	1,646	7.37	4.97	10.55
Pastures 5/	1,165	11,772	762	5.18	2.74	4.76
Rangeland 6/	---	22,736	---	---	5.20	---
Forest plantings	418	5,601	156	7.85	14.04	14.89
Noncropland	2,806	23,925	55	20.33	15.74	55.00
Aquatic areas	1,742	2,680	---	101.28	13.50	---
Total or average	328,564	290,515	219,917	6.45	3.78	9.35

1/ Calculated from United States totals shown on individual tables as acres treated times the average costs, for acreages on which costs were reported.

2/ Total costs divided by acreage treated (see table 4) do not always equal average costs from individual tables because of grouping and rounding on summary tables.

3/ Tobacco and sugarcane are not included in table 2.

4/ Root crops, cucurbits, vegetable legumes, vegetable seed crops, solanaceous crops, and all vegetables except sweet corn. See individual tables.

5/ Annual, perennial improved, and perennial unimproved. See individual tables for more detailed information.

6/ Mountain, prairie, arid, and rainbelt. See individual tables for more detailed information.

Table 6.--Effectiveness of herbicides, by number of States reporting, 1968

Crop or area	Preemergence only			Postemergence only			Pre- + postemergence		
	Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor
Corn	38	8	1	29	17	1	26	7	0
Cotton	14	4	0	12	5	0	12	2	0
Sorghum	14	12	0	16	8	1	11	1	0
Soybeans	11	18	1	3	19	4	7	9	0
Wheat	2	5	0	26	12	0	4	2	0
Other small grains	6	5	0	30	14	1	6	2	0
Rice	1	0	0	4	1	0	1	0	0
Tobacco	3	5	0	2	6	0	0	1	0
Peanuts	5	4	0	2	5	0	4	3	0
Sugarbeets	7	9	1	5	7	2	5	3	0
Sugarcane	2	1	0	1	2	0	1	1	0
Legume seeds	0	8	0	5	10	0	1	2	0
Grass seeds	2	0	0	8	4	1	3	0	0
Sweet corn	28	2	0	15	9	1	12	3	0
Other vegetables 1/ 2/	45	33	11	22	20	5	19	12	3
Fruits and nuts 2/	19	16	1	23	19	0	16	3	0
Ornamentals 2/	18	16	0	13	7	1	7	2	0
Lawns 2/	24	10	1	27	13	0	15	5	0
Hay	14	8	0	16	17	2	6	3	0
Pastures 2/ 3/	7	6	0	22	21	1	6	0	0
Rangeland 2/ 4/	--	--	--	13	8	1	--	--	--
Forest plantings	5	3	0	11	9	0	2	1	0
Noncropland	7	2	0	12	14	0	3	0	0
Aquatic areas	4	2	0	9	9	1	--	--	--

*A zero entry means that, of the States reporting the use of herbicides on a particular crop, no State reported in this category. A dash entry means that no State reported herbicide use for preemergence only or preemergence plus postemergence treatment.

1/ Root crops, cucurbits, vegetable legumes, vegetable seed crops, solanaceous crops, and all vegetables except sweet corn. Total grouping of 11 vegetable crops or crop groups.

2/ Each State counted only once in each column; however, within each grouping, a State could report in more than one column under each major heading. See individual tables within groupings.

3/ Annual, perennial improved, and perennial unimproved. Three groupings.

4/ Mountain, prairie, arid, and rainbelt. Four groupings.

Table 7.--Herbicide usage trend, need for better herbicides, and residue problems, by number of States reporting, United States, 1968

Crop or area	Herbicide usage trend			Need for better herbicides 1/			Herbicide persistence problem 1/		
	Up	Stationary	Down	Urgent	Some	Little	No	Yes	Percent of treated acres affected
	Number of States reporting								Percent
Corn	42	6	0	4	40	4	16	32	11
Cotton	13	5	0	0	16	2	11	7	5
Sorghum	19	8	0	3	21	3	15	12	31
Soybeans	28	2	0	13	16	1	26	4	1
Wheat	16	21	1	4	29	5	36	2	1
Other small grains	20	23	2	2	37	6	43	2	2/
Rice	3	2	0	1	4	0	5	0	0
Tobacco	10	2	0	1	10	1	7	5	29
Peanuts	5	4	0	3	6	0	7	2	7
Sugarbeets	11	6	0	9	8	0	10	7	5
Sugarcane	2	1	0	2	1	0	3	0	0
Legume seeds	13	6	0	6	11	2	17	2	6
Grass seeds	8	5	0	2	9	2	11	2	2
Sweet corn	20	11	0	3	24	4	14	17	24
Other vegetables 3 / 4/	44	30	2	36	44	16	48	13	2
Fruits and nuts 3/	33	12	0	14	32	9	36	6	2/
Ornamentals 3/	28	5	0	12	23	2	26	5	11
Lawns 3/	37	1	0	5	30	4	32	5	1
Hay	21	13	2	10	22	4	31	5	6
Pastures 3/ 5/	26	16	0	7	30	6	40	0	0
Rangeland 3/ 6/	13	4	1	4	14	2	18	0	0
Forest plantings	19	1	2	5	13	4	21	1	1
Noncropland	20	7	0	6	20	1	23	4	1
Aquatic areas	17	2	1	7	13	0	15	5	3

* A zero entry means that of the States reporting herbicide usage trends, quality needs, or persistence problems, no State reported in this category.

1/ Identifies problem areas needing additional research.

2/ Less than 1 percent.

3/ Each State counted only once in each column; however, within each grouping, a State could report in more than one column under each major heading. See individual tables within groupings.

4/ Root crops, cucurbits, vegetable legumes, vegetable seed crops, solanaceous crops, and all vegetables except sweet corn. Total grouping of 11 vegetable crops or crop groups.

5/ Annual, perennial improved, and perennial unimproved. Three groupings.

6/ Mountain, prairie, arid, and rainbelt. Four groupings.

NATIONAL, REGIONAL, AND AGRICULTURAL SIGNIFICANCE OF THE MOST FREQUENTLY REPORTED WEEDS

(See General Limitations)

The weed questionnaire of the 1968 survey covered 49 crops and land-use areas. For each crop or area, State specialists were requested to: (1) List the five weeds that remain the greatest problems despite existing technology; (2) estimate the percent of the acreage infested by each weed listed; and (3) indicate whether the intensity of each infestation was generally stationary, up, or down.

Instructions for completing the 1968 questionnaire were more explicit than for the 1965 questionnaire; consequently, weed reports submitted by State specialists in 1968 greatly improved. A total of 5,531 individual crop-weed listings was included on the completed questionnaires for 1968, and increase of 59 percent over the 3,469 for 1965. From these listings, individual weeds were identified as (1) species (e.g. giant foxtail), (2) generic complexes (e.g. foxtails), or (3) intergeneric or mixed complexes (e.g. annual grasses).[8] A comparison of the number of identifiable weeds listed during the 2 years shows:

Weeds identified as--	1965		1968	
	Number	Pct.	Number	Pct.
Species----------	250	64	364	68
Generic complexes------	120	30	147	27
Intergeneric complexes-	22	6	26	5
Total----------	392	100	537	100

While an overall increase in all categories was expected because of the expanded crop coverage, the proportion of the weeds reported as species in 1968 was 4 percent greater, and those reported as generic and intergeneric complexes were 3 percent and 1 percent less, respectively than in 1965. Also, the 37 percent increase in the total number of weeds listed was much less than the percentage increase in total listings (59 percent). Thus, the 1968 survey provided for a better assessment of the relative importance of the various weeds in two ways: first, weeds were listed more specifically; and second, individual weeds were reported more frequently.

The total frequency with which a given weed was reported is only one measure of the weed's relative importance. The geographical distribution, measured by the number of States reporting a weed, and the agricultural distribution, measured by the number of crops in which reported, also influence the overall standing of one weed in comparison with other weeds. All three of

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[8]All weeds listed in this report are identified by botanical names in the Appendix.

these major criteria--reporting frequency, geographical distribution, and agricultural distribution--as well as modifying ranking scores for relative importance by regions, crop groupings, and estimated acreages, were considered in assessing the relative rank of the 25 most frequently reported weeds (tables 8, 9, and 10). Table 8 shows the detailed derivation of the composite scores for pigweeds and docks, which were ranked first and last among the top 25 weeds. Composite scoring compensated in part for an inherent bias in reporting that favored the 36 separate crops surveyed and discriminated against some of the noncrop situations, such as rangelands, which are somewhat more regional in character and which may be larger in total land areas than all cultivated areas combined. This discrepancy in the reporting system is a general limitation to be considered in all evaluations reported.

Although two-thirds of the weeds in tables 9 and 10 were listed as generic complexes, in the majority of instances, tabulations indicated the predominance of a single species in each complex. For example, the 415 reports for pigweeds (and other amaranths) may be reduced to 147 reports for redroot pigweed, 254 for pigweed, 13 for spiny amaranth (Florida only), and 1 for amaranth (also Florida). While only two species appear to be involved, the questionable identity of the generic listings made it advisable to pool all the listings for assessment as "type" weeds. Intergeneric complexes were not included.

From overall considerations the 10 top-ranked weeds in the United States in decreasing order, were pigweeds, crabgrasses, quackgrass, foxtails, thistles, ragweeds, lamsquarters, nutsedges, johnsongrass, and chickweeds (table 9). All showed the following common characteristics: composite score greater than 80, reporting frequency greater than 150, occurrence in at least 50 percent of the States and in 50 percent of the crops and land-use areas, and scores greater than 30 for relative importance in the four regions and 10 groupings of crops or other situations. In fact, from among the top 10 weeds reported most frequently in each region, eight weeds from the northeastern region, seven from the north central region, six from the southern region, and five from the western region were included among the top 10 in the United States.

Of the weeds ranked 11 through 25 in importance, only barnyardgrass (no. 11) and bindweeds (no. 14) occurred among the top 10 weeds of more than one region. Most of the importance of the last 15 weeds, then, arises from specific regional significance. The weeds of specific regional significance, in addition to those in the top 10 for the United States, were:

- Northeastern Region--dandelions and panicums.
- North Central Region--barnyardgrass, bindweeds, and smartweeds.
- Southern Region--bermudagrass, cocklebur, morningglories, and henbit.
- Western Region--barnyardgrass, bindweeds, bromes, bluegrasses, and kochia.

Mustards, purslane, and docks did not rank among the top 10 for any one region. Mustards were reported about equally in all four regions but mainly in small grains. Purslane was reported most frequently in horticultural crops; and docks in hay and pastures.

Table 8.--Examples of derivation of composite scores (pigweeds and docks) for establishing relative rank among the 25 most frequently reported weeds and weed complexes

Scoring criteria	Pigweeds		Docks	
	Rank	Score	Rank	Score
General scoring (1-25): 1/				
Total number of reports	1	25	25	1
Number of States	1	25	21	5
Number of crops or situations	3	23	24	2
Modifying scores (0-10): 2/				
Regions--				
Northeastern	3	8	---	0
North Central	2	9	---	0
Southern	2	9	---	0
Western	1	10	---	0
Crop or situation groupings--				
Agronomic crops	1	10	---	0
Vegetable crops	1	10	---	0
Fruit and nut crops	3	8	---	0
Ornamental crops	4	7	---	0
Turf areas	---	0	---	0
Hay crops	6	5	10	1
Pastures	4	7	3	8
Rangelands	---	0	---	0
Forest plantings	2	9	---	0
Noncroplands	---	0	---	0
Acreage categories--				
Total acreage infested	2	9	---	0
Percent reported "up"	---	0	---	0
Composite score		174		17

1/ Based on numerical arrays for the 25 most frequently reported weeds (see table 9); scored 1 to 25 in order of increasing values.

2/ Based on numerical arrays by number of reports for the 10 weeds or weed complexes reported most frequently in each criterion; scored 0 if not included in the top ten 10 (see tables 9 and 10 and individual crop tables).

Table 9.--Relative rank of the 25 most frequently reported weeds and weed complexes in the United States, based on a composite score determined from total frequency of reporting (number of reports), numbers of States and crops in which reported, and occurrence among top 10 weeds in four regions and 10 groupings of crops or land-use areas, 1968

Rank	Weed or Complex	Composite score 1/	Number of-- 2/			Number of reports by regions-- 3/				Regional and crop score 4/
			Reports	States	Crops	North-eastern	North Central	Southern	Western	
1	Pigweeds-------	174	415	46	38	*81	* 83	*155	*96	92
2	Crabgrasses----	157	380	43	40	*65	* 63	*235	17	78
3	Quackgrass-----	136	221	29	36	*89	* 74	9	*49	75
4	Foxtails-------	115	214	33	38	*46	*113	19	*36	44
5	Thistles-------	107	168	37	28	25	* 71	14	*58	53
6	Ragweeds-------	106	174	34	38	*51	* 44	* 77	2	46
7	Lambsquarters--	105	248	41	34	*86	* 56	33	*73	41
8	Nutsedges------	91	201	31	33	*69	20	* 89	23	31
9	Johnsongrass---	89	162	26	36	5	11	*118	28	34
10	Chickweeds-----	84	152	40	26	*36	27	* 58	31	34
11	Barnyardgrass--	74	149	34	37	29	* 27	14	*79	19
12	Bermudagrass---	59	98	18	35	2	1	* 71*	24	19
13	Dandelions-----	58	93	34	12	*34	20	12	27	21
14	Bindweeds------	56	110	23	31	17	* 39	6	*48	21
15	Cocklebur------	53	98	26	25	--	18	* 68	12	10
16	Mustards-------	53	90	35	30	18	22	21	29	2
17	Bromes---------	43	77	25	20	2	26	9	*40	19
18	Bluegrasses----	34	67	28	18	9	13	15	*30	13
19	Purslane-------	33	72	21	20	18	23	20	11	6
20	Morningglories-	29	83	24	25	8	9	* 63	3	4
21	Panicums-------	29	72	26	25	*31	18	19	4	1
22	Smartweeds-----	27	69	25	23	11	* 42	9	7	3
23	Kochia---------	19	57	12	24	--	20	2	*35	2
24	Henbit---------	17	64	18	18	8	6	* 48*	2	3
25	Docks----------	17	52	22	16	4	3	40	5	9

1/ Maximum score possible, 235; see 2/, 4/, and Table 9.

2/ Weeds scored from 1 to 25 in order of increasing numbers listed in the separate columns for reports, States, and crops (or land-use areas). Maximum number of States, 50; of crops or land-use areas, 49.

3/ Asterisk (*) designates weed or complex among the 10 most frequently reported in each region.

4/ The 10 most frequently reported weeds scored from 1 to 10 in order of increasing frequency of reporting in each region and in the following crop and land-use groupings: agronomic crops, vegetable crops, fruit and nut crops, ornamental crops, lawn and other turf areas, hay crops, all pastures, all rangelands, forest plantings, and noncroplands. None of the 10 most frequently reported weeds in aquatic areas occurred in the above list. See separate sections and tables in remainder of this report.

Table 10.--Estimates of acres of selected cultivated crops infested by the 25 most frequently reported weeds: total acreage, acres reported in an upward trend, and percent of total infested acreage reported "up," 1968

Weed or complex	Acres of selected crops infested 1/		
	Total	Intensity trend "up"	
	1,000 acres	1,000 acres	Percent
1. Pigweeds	*59,479	4,242	7
2. Crabgrasses	*25,664	7,317	28
3. Quackgrass	*18,645	1,584	8
4. Foxtails	*69,358	17,638	25
5. Thistles	11,825	4,657	*39
6. Ragweeds	7,956	2,330	24
7. Lambsquarters	*15,060	53	< 1
8. Nutsedges	7,492	6,653	*89
9. Johnsongrass	*18,581	9,739	*52
10. Chickweeds	2,764	600	22
11. Barnyardgrass	10,331	4,316	*42
12. Bermudagrass	229	156	*68
13. Dandelions	2,412	1,796	*74
14. Bindweeds	13,893	3,249	23
15. Cocklebur	*28,134	10,581	38
16. Mustards	*26,369	3,488	13
17. Bromes	*15,691	6,435	41
18. Bluegrasses	128	1	1
19. Purslane	3,116	2,891	*93
20. Morningglories	9,140	3,732	41
21. Panicums	14,182	7,923	*56
22. Smartweeds	*18,425	1,629	9
23. Kochia	9,630	5,820	*60
24. Henbit	4,384	2,380	*54
25. Docks	854	285	33

1/ Harvested acreages (millions of acres) 1968: agronomic crops 224.4; vegetable crops (excluding vegetable seed crops) 7.0; all hay 62.7; total for selected crops 294.1. Figures marked with an asterisk (*) were the 10 top-ranked weeds for total areas of infestations and for percent reported in an upward trend; values were scored as described in footnote 4/ of table 9 and are included in the composite scores shown in table 9.

Because State specialists provided information on the percent of the crop acreages infested and classified the infestations by intensity trends, the actual acreages reported infested can be estimated for many of the crops. State acreages are available for all of the agronomic and vegetable crops, except vegetable seed crops, and for all hay crops in Agricultural Statistics, published annually by the U.S. Department of Agriculture. The selected crops represented 294 of the 300 million acres of all crops harvested in 1968. Table 10 includes estimates of the total acreages reported infested by the 25 most frequently reported weeds in the selected crops and acreages on which the infestation trends were reported as intensifying ("up").

From the acreage estimates (table 10), the relative seriousness of a weed can be assessed in two ways: first, in overall scope or extent of the problem; and second, in whether the weed, when reported was increasing in intensity. Presumably, those that were reported as "up," or intensifying, are resistant to control pressures being applied or cannot be controlled effectively by existing technology. Even when the number of acres infested is small, weeds that are increasing in intensity can constitute serious threats to future production. Of those weeds that constituted the top 10 in number of acres infested, only one, johnsongrass, was also a problem as one of the top 10 that had a high percentage reported as "up." The five weeds that had the largest reported acreages of infestation were: foxtails, pigweeds, cocklebur, mustards, and crabgrasses. However, the five reported as intensifying most (highest percentages reported "up") were: purslane, nutsedges, dandelions, bermudagrass, and kochia. The data of table 10 should provide a base for monitoring future changes in the importance of individual weeds as national and regional problems.

Some of the changes in relative importance and trends of problem weeds were interpreted from an analysis of the top 15 agronomic weeds reported in 1965 and 1968 (table 11). During this period, crabgrasses, cocklebur, nutsedges, and ragweeds increased in relative importance (reporting rank), while johnsongrass, lambsquarters, morningglories, and bindweeds decreased. However, the relative rank of the other seven weeds remained the same. In 1968, the harvested acreage of agronomic crops was about 3 percent greater than in 1965, chiefly because of increases in the acreage of soybeans and small grains. Proportionally, six weeds showed much greater increases in acreages infested. These were: barnyardgrass (+79 percent), cocklebur (+54 percent), bindweeds (+27 percent, pigweeds (+9 percent), nutsedges (+8 percent), and crabgrasses (+7 percent). Weeds which decreased significantly were morningglories (-38 percent), lambsquarters (-38 percent), thistles (-23 percent), johnsongrass (-22 percent), mustards (-15 percent), and ragweeds (-10 percent). Acreages reported infested with foxtails, quackgrass, and wild oat remained about the same.

Significant shifts in acreages for the three trends are also shown in table 10. Morningglories, nutsedges, quackgrass, thistles, ragweeds, and wild oat intensified markedly on some acreages that were earlier classified as stationary or "down." Infestations of pigweeds, foxtails, crabgrasses, lambsquarters, and bindweeds were more stabile (stationary). Greater proportions of the acreages of both johnsongrass and cocklebur infestations were reported as down; however, only johnsongrass decreased in total agronomic acreage. The proportional increase in the down acreage of cocklebur may represent an

actual increase in cocklebur infestations that were not yet severe in 1968. These shifts in infestation trends probably reflect the relative effectiveness of weed control technology against specific weeds in the various crops and the broader application of effective weed control measures in all crops.

Table 11. Comparison of the 15 weeds reported most frequently in agronomic crops, 1965 and 1968: number of reports, acres reported infested, and percentages by trends

Weed or complex	Number of reports 1/		Acres infested 2/ 1,000 acres		Percentage of acreage by trend 3/					
					1965			1968		
	1965	1968	1965	1968	Sta.	Up	Down	Sta.	Up	Down
Pigweeds-------	*109	*121	49,633	54,134	60	28	12	85	7	8
Foxtails-------	* 77	* 87	64,465	63,772	26	73	1	76	23	1
Johnsongrass---	* 63	* 66	22,341	17,459	39	55	6	22	54	24
Crabgrasses----	* 60	* 71	20,770	22,205	28	51	21	47	33	20
Lambsquarters--	* 55	55	19,501	12,077	74	14	12	97	< 1	3
Morningglories-	51	47	14,651	9,077	72	27	1	53	41	6
Cocklebur------	44	* 56	18,102	27,973	56	43	1	39	38	23
Nutsedges------	41	50	6,682	7,208	21	79	0	10	90	>1
Mustards-------	39	49	28,276	24,158	39	19	42	42	14	44
Barnyardgrass--	35	49	5,180	9,292	31	49	20	43	43	14
Quackgrass-----	35	43	10,318	10,271	54	2	44	54	13	33
Thistles-------	25	38	11,335	8,698	58	12	30	75	25	0
Bindweeds------	20	32	10,811	13,735	55	30	0	76	24	0
Ragweeds-------	19	37	5,915	5,332	77	23	< 1	60	40	< 1
Oat, wild------	19	25	21,135	21,611	77	7	16	67	33	0

1/ Asterisks (*) designate the five most frequently reported weeds in each year.
2/ In 1965, 217.4 million acres of agronomic crops harvested, not including tobacco and sugarcane; in 1968, 224.4 million acres, including 1.4 million acres of tobacco and sugarcane.
3/ Acreage estimates of infestations classified by intensity trends and expressed as percentage of the total acreage reported infested each year. Sta.--stationary.

AGRONOMIC CROPS

(See General Limitations)

The 1968 survey included 13 agronomic crops: corn, cotton, sorghum, soybeans, wheat, other small grains (oats, rye, and barley as a group), rice, tobacco, peanuts, sugarbeets, sugarcane, legume seeds, and grass seeds. In the 1965 survey, tobacco and sugarcane were not included, wheat was combined with other small grains, and legume and grass seeds were reported jointly as forage seeds.

In 1968, herbicides were applied on 128.9 million acres of agronomic crops, or on approximately 57 percent of the 224.3 million acres harvested. Of the treated acres, 45.2 million received only preemergence treatment at an average cost of $5.43 per acre; 61.6 million received postemergence treatment only ($2.71 per acre); and 22.1 million received both preemergence and postemergence treatments at an average cost of $7.83 per acre. Preemergence treatments were applied on 67.3 million acres and postemergence treatments were applied on 83.7 million. The total cost of herbicides, including cost of application, was approximately $586 million (average cost $4.55 per acre).

A new feature that appeared in the 1968 survey was the reporting of acres that were treated preemergence only, acres treated postemergence only, and acres which received both preemergence and postemergence treatment. Combination of both preemergence and postemergence treatments were used on approximately 50 percent of the treated cotton acreage, 33 percent of the treated sugarcane acreage, 19 to 23 percent of the treated acreages of corn, soybeans, and peanuts, and 7 to 10 percent of the treated acreages of sorghum, small grains other than wheat or rice, and sugarbeets. Only 1 or 2 percent of the treated acreages of wheat, rice, tobacco, legume seeds, and grass seeds received both preemergence and postemergence treatments.

The total acreages treated preemergence and the total acreages treated postemergence are not presented in the tables, but these totals can be calculated by adding the acreage treated both preemergence and postemergence to the acreage treated preemergence only or to the acreage treated postemergence only, whichever is appropriate. Since 1962, the acreages of agronomic crops treated with herbicides have increased almost threefold. The ratio of acres treated postemergence to acres treated preemergence has declined from 3.42 in 1962 to 2.07 in 1965 to 1.24 in 1968. In 1968, a total of 4.83 acres was treated preemergence only or postemergence only for each acre that received both types of treatments. For all agronomic crops, expenditures for herbicides and their application have increased from $133 million in 1962 to $339 million in 1965 and to $586 million in 1968.

The 10 weeds reported most frequently in agronomic crops in 1968, in decreasing order of frequency, were: pigweeds, foxtails, crabgrasses, johnsongrass, cockleburs, lambsquarters, nutsedges, barnyardgrass, mustards, and morningglories. Weeds which appeared to be increasing in relative importance in at least one crop are: quackgrass, bindweeds, panicums, sidas, thistles, smartweeds, pigweeds, kochia, bulrushes, signalgrass, sprangletop, cockleburs, and beggarweed. Weeds which declined in relative importance in at least one

crop were: shattercane, sandburs, barnyardgrass, foxtails, lambsquarters, quackgrass, ragweeds, bromes, and knawel. The relative importance of a weed can go up or down without variation in the problem it causes, because other weeds may become more or less serious in any one crop. The continued frequency with which pigweeds and crabgrasses were reported was surprising, because methods for controlling these species were generally good. The abundance of pigweeds and crabgrasses, however, may give them a degree of notoriety even though effective control measures are available.

Tables 1 through 7 present national aspects of the extent, cost, effectiveness, usage trends, and persistence problems associated with herbicides used in individual crops. Tables 8 through 11 summarize important weed problems, and tables 12 through 63 present similar data on a State and regional basis. Each crop is discussed separately. All tables for the crops included in Agronomic Crops are grouped at the end of the discussions (see pages 31 through 80).

Corn

In 1968, herbicides were applied on 48.9 million acres of corn, or on approximately 76 percent of the 64.3 million acres harvested (tables 1, 3, and 4). Of the treated acres, 20.4 million received only preemergence treatment at a cost of $4.84 per acre; 18.9 million received postemergence treatment only ($2.46 per acre); and 9.6 million received both preemergence and postemergence treatments ($6.15 per acre) (tables 4, 5, and 12). Farmers treated 76 percent of this acreage with their own equipment, while custom operators treated 24 percent (tables 3 and 12). The cost of herbicides used in corn, including cost of application, was $204.5 million (tables 2 and 3).

Preemergence treatments used in 1968 appeared slightly more effective than those used in 1965, and postemergence treatments appeared less effective than in 1965. Combinations of preemergence and postemergence treatments were rated good in 26 States and fair in seven States. No State rated them poor. Texas, New Mexico, Utah, and Hawaii reported an urgent need for better herbicides. The herbicide usage trend was up in 42 States, stationary in six, and down in none. Problems of herbicides persisting in soil in 1968 appeared to have increased slightly since 1965. In 1968, 32 States reported problems of persistence, while 16 States reported no major problems with persistence. Persistence problems affected 11 percent of the total acreage treated and were most severe in the western region (tables 6, 7, and 13).

Weeds listed among the five most important in at least four States were: pigweeds, crabgrasses, lambsquarters, quackgrass, foxtails, nutsedges, Canada thistle, johnsongrass, barnyardgrass, bindweeds, cockleburs, morningglories, panicums, kochia, velvetleaf, and witchgrass. Newcomers to this list since 1965 were: bindweeds, panicums, kochia, and witchgrass. Major weeds that appeared to have decreased in relative importance since 1965 were shattercane and sandburs (tables 14 and 15).

Cotton

In 1968, herbicides were applied on 9.2 million acres of cotton. This was approximately 91 percent of the 10.2 million acres harvested (tables 1, 3,

and 4). Of the treated acres, 3.4 million received only preemergence treatment at a cost of $6.54 per acre; 1.2 million received postemergence treatment only ($4.52 per acre); and 4.6 million received both preemergence and postemergence treatments ($13.32 per acre) (tables 4, 5, and 16). Farmers treated 64 percent of these acreages with their own equipment, while custom operators treated the remaining 36 percent (tables 3 and 16). The cost of herbicides used in cotton, including cost of application, was $89.3 million (tables 2 and 3).

Preemergence treatments used in 1968 appeared about the same in effectiveness as those used in 1965, and postemergence treatments appeared more effective than in 1965. Combinations of preemergence and postemergence treatments were rated good in 12 States and fair in two. No State rated them poor, and no State reported an urgent need for better herbicides. The herbicide usage trend was up in 13 States, stationary in five, and down in none. Problems of herbicides persisting in soil in 1968 appeared to have decreased slightly since 1965. In 1968, seven States reported problems of persistence, and 11 reported no major problems with persistence. Persistence problems affected 5 percent of the treated acreage and were most severe in the western region (tables 6, 7, and 17).

Weeds listed among the five most important in at least four States were: pigweeds, crabgrasses, nutsedges, johnsongrass, cockleburs, morningglories, and sidas. The only newcomer to this list since 1965 was the complex of sidas. The only major weed that appeared to have decreased in relative importance since 1965 was barnyardgrass (tables 18 and 19).

Sorghum

In 1968, herbicides were applied on 7.4 million acres of sorghum. This represented approximately 42 percent of the 17.4 million acres harvested (tables 1, 3, and 4). Of the treated acres, 2.9 million received only preemergence treatment at a cost of $6.30 per acre; 4.0 million received postemergence treatment only ($3 per acre); and 500,000 received both preemergence and postemergence treatments ($7.80 per acre) (tables 4, 5, and 20). Farmers treated 63 percent of this acreage with their own equipment, while custom operators treated the remaining 37 percent (tables 3 and 20). The cost of herbicides used in sorghum, including cost of application, was $33.8 million (tables 2 and 3).

The preemergence and postemergence treatments used in 1968 appeared more effective than those used in 1965. Combinations of preemergence and postemergence treatments were rated good in 11 States and fair in one. No State rated them poor. Texas, New Mexico, and Hawaii reported an urgent need for better herbicides. The herbicide usage trend was up in 19 States, stationary in eight, and down in none. Problems of herbicides persisting in soil in 1968 appeared to be about the same as in 1965. In 1968, 12 States reported problems of persistence, while 15 reported no major problems with persistence. Persistence problems affected 31 percent of the treated acreage, principally in the southern and western regions (tables 6, 7, and 21).

Weeds listed among the five most important in at least four States were: pigweeds, crabgrasses, lambsquarters, foxtails, johnsongrass, barnyardgrass,

field bindweed, cockleburs, and morninglories. The only newcomer to this list since 1965 was field bindweed. No major weeds decreased in relative importance since 1965 (tables 22 and 23).

Soybeans

In 1968, herbicides were applied on 22.3 million acres of soybeans. This represented approximately 55 percent of the 40.7 million acres harvested (tables 1, 3, and 4). Of the treated acres, 15.5 million received only preemergence treatment at a cost of $5.36 per acre; 1.6 million received postemergence treatment only ($2.95 per acre); and 5.1 million received both preemergence and postemergence treatments ($6.72 per acre) (tables 4, 5, and 24). Farmers treated 84 percent of this acreage with their own equipment, while custom operators treated the remaining 16 percent (tables 3 and 24). The cost of herbicides used in soybeans, including cost of application, was $124.4 million (tables 2 and 3).

Preemergence treatments in 1968 appeared much more effective than those used in 1965, and postemergence treatments appeared about equal to those in 1965. Combinations of preemergence and postemergence treatments were rated good in seven States and fair in 12. No State rated them poor. Four States in the north central region and nine States in the southern region reported an urgent need for better herbicides. The herbicide usage trend was up in 28 States, stationary in two, and down in none. Problems of herbicides persisting in soil in 1968 appeared to be about the same as in 1965. In 1968, four States reported problems of persistence, and 26 reported no major problems with persistence. Persistence problems affected only about 1 percent of the treated acreage (tables 6, 7, and 25).

Weeds listed among the five most important in at least four States were: pigweeds, crabgrasses, lambsquarters, foxtails, nutsedges, ragweeds, johnsongrass, cockleburs, morninglories, smartweeds, jimsonweed, and velvetleaf. There was no change in this list since 1965, except that smartweeds were erroneously listed as red sorrel in 1965 (tables 26 and 27).

Wheat

In 1968, herbicides were applied on 21.3 million acres of wheat, or on approximately 38 percent of the 55.3 million acres harvested (tables 1, 3, and 4). Of the treated acres, 600,000 received only preemergence treatment at a cost of $3.78 per acre; 20.3 million received postemergence treatment only ($2.18 per acre; and 300,000 received both preemergence and postemergence treatments ($3.18 per acre) (tables 4, 5, and 28). Farmers treated 54 percent of these acreages with their own equipment, while custom operators treated 46 percent (tables 3 and 28). The cost of herbicides used in wheat, including the cost of application, was $47.6 million (tables 2 and 3).

Preemergence treatments of wheat appeared slightly less effective in 1968 than those reported for all small grains in 1965, and postemergence treatments appeared slightly more effective than in 1965. Combinations of preemergence and postemergence treatments were rated good in four States and fair in two. No State rated them poor. New York, Oklahoma, Oregon, and Utah reported an urgent need for better herbicides. The herbicide usage trend was up in 16

States, stationary in 21, and down in one. Problems of herbicides persisting in soil appeared to be minor. In 1968, only two States reported problems of persistence, while 36 reported no major problems with persistence. Persistence problems affected only about 1 percent of the treated acreage (tables 6, 7, and 29).

Weeds listed among the five most important in at least four States were: thistles, chickweeds, bindweeds, mustards, bromes, henbit, smartweeds, kochia, docks, wild buckwheat, cockles, wild garlic, knawel, wild oat, field pennycress, pepperweeds, wild radish, sunflowers, and Russian thistle. Newcomers to this list since 1965 were: thistles, kochia, cockles, field pennycress, pepperweeds, wild radish, and Russian thistle. Major weeds that appeared to have decreased in relative importance since 1965 were foxtails, lambsquarters, quackgrass, and ragweeds. In 1965, smartweeds were erroneously listed as red sorrel in small grains (tables 30 and 31).

Other Small Grains

In 1968, herbicides were applied on 14.7 million acres of oats, barley, and rye, or on approximately 53 percent of the 27.9 million acres harvested (tables 1, 3, and 4). Of the treated acres, 500,000 received only preemergence treatment at a cost of $4.42 per acre; 12.9 million received postemergence treatment only ($1.96 per acre); and 1.4 million received both preemergence and postemergence treatments ($2.60 per acre) (tables 4, 5, and 32). Farmers treated 62 percent of these acreages with their own equipment, while custom operators treated 38 percent (tables 3 and 32). The cost of herbicides used in oats, barley, and rye, including cost of application, was $30.8 million (tables 2 and 3).

Preemergence treatments used in oats, barley, and rye appeared slightly more effective in 1968 than those used in all small grains in 1965, and postemergence treatments appeared considerably more effective than in 1965. Combinations of preemergence and postemergence treatments were rated good in six States and fair in two. No State rated them poor. Oklahoma and Utah reported an urgent need for better herbicides. The herbicide usage trend was up in 20 States, stationary in 23, and down in two. Problems of herbicides persisting in soil were minor in oats, barley, and rye in 1968. In 1968, only two States reported problems of persistence, and 43 reported no major problems with persistence. The acreage affected by persistence problems was less than 1 percent of the total acreage treated (tables 6, 7, and 33).

Weeds listed among the five most important in at least four States were: pigweeds, lambsquarters, foxtails, thistles, chickweeds, bindweeds, mustards, henbit, smartweeds, kochia, dock, wild buckwheat, wild garlic, knawel, wild oat, and wild radish. Newcomers to this list since 1965 were: pigweeds, thistles, kochia, and wild radish. Major weeds that appeared to have decreased in relative importance since 1965 are quackgrass, ragweeds, downy brome, and knawel. In 1965, smartweeds in small grains were erroneously reported as red sorrel (tables 34 and 35).

Rice

In 1968, herbicides were applied on 1.9 million acres of rice. This represented approximately 82 percent of the 2.4 million acres harvested (tables 1, 3, and 4). Of the treated acres, 15,000 received only preemergence treatment at a cost of $16 per acre; 1.9 million received postemergence treatment only ($11.32 per acre); but only 15,000 received both preemergence and postemergence treatments ($20 per acre) (tables 4, 5, and 36). Farmers treated only 13 percent of these acreages with their own equipment, while custom operators treated the remaining 87 percent (tables 3 and 36). The cost of herbicides used in rice, including cost of application, was $21.9 million (tables 2 and 3).

Preemergence and postemergence treatments used in 1968 appeared about equal in effectiveness to those used in 1965. Combinations of preemergence and postemergence treatments were rated good in California, the only State reporting any use of both preemergence and postemergence treatments. Texas reported an urgent need for better herbicides. The herbicide usage trend was up in three States, stationary in two, and down in none. No problems of herbicides persisting in soil were reported in 1965 or in 1968 (tables 6, 7, and 37).

Weeds listed among the five most important in at least two States were: barnyardgrass, bulrushes, ducksalad, red rice, hemp sesbania, signalgrasses, and sprangletops. Newcomers to this list since 1965 were: bulrushes, signalgrasses, and sprangletops. No major weeds decreased in relative importance since 1965 (tables 38 and 39).

Tobacco

In 1968, herbicides were applied on 72,000 acres of tobacco, or on approximately 8 percent of the 880,000 acres harvested (tables 1, 3, and 4). Of the treated acres, 22,600 received only preemergence treatment at a cost of $9.16 per acre; 48,500 received postemergence treatment only ($12.85 per acre); and 400 received both preemergence and postemergence treatments ($13 per acre) (tables 4, 5, and 40). Farmers treated 94 percent of these acreages with their own equipment, while custom operators treated the remaining 6 percent (tables 3 and 40). The cost of herbicides used in tobacco, including cost of application, was $835,000 (tables 2 and 3).

Preemergence treatments were rated good in three States and fair in five States in 1968. Postemergence treatments were rated good in two States and fair in six. Combinations of preemergence and postemergence treatments, used only in Florida, were rated fair. Kentucky reported an urgent need for better herbicides. The herbicide usage trend was up in 10 States, stationary in two, and down in none. In 1968, five States reported problems with herbicides persisting in soil, and seven reported no major problems with persistence. Persistence problems affected 29 percent of the treated acreage (tables 6, 7, and 41).

Weeds listed among the five most important in at least three States were: pigweeds, crabgrasses, lambsquarters, Florida pusley, nutsedges, ragweeds,

bermudagrass, and carpetweed. Tobacco was not included in the report on weeds in the 1965 survey (tables 42 and 43).

Peanuts

In 1968, herbicides were applied on 1.3 million acres of peanuts. This represented approximately 88 percent of the 1.4 million acres harvested (tables 1, 3, and 4). Of the treated acres, 844,000 received only preemergence treatment at a cost of $9.72 per acre; 169,000 received postemergence treatment only ($5.87 per acre); and 257,000 received both preemergence and postemergence treatments ($12.83 per acre) (tables 4, 5, and 44). Farmers treated 84 percent of these acreages with their own equipment, while custom operators treated the remaining 16 percent (tables 3 and 44). The cost of herbicides used in peanuts, including cost of application, was $12.5 million (tables 2 and 3).

Preemergence and postemergence treatments used in 1968 appeared about equal in effectiveness to those used in 1965. Combinations of preemergence and postemergence treatments were rated good in four States and fair in three. No State rated them poor. Texas, Virginia, and New Mexico reported an urgent need for better herbicides. The herbicide usage trend was up in five States, stationary in four, and down in none. Problems of herbicides persisting in soil in 1968 appeared to have increased slightly since 1965. In 1968, two States reported problems of persistence, while seven reported no major problems with persistence. Persistence problems affected only 7 percent of the treated acreage in the United States but 70 percent of the acreage in Oklahoma (tables 6, 7, and 45).

Weeds listed among the five most important in at least three States were: pigweeds, crabgrasses, nutsedges, cockleburs, morningglories, panicum, beggarweeds, and sicklepod. Newcomers to this list since 1965 were cockleburs and beggarweeds. The only major weed or complex that appeared to have decreased in relative importance since 1965 was sandburs (tables 46 and 47).

Sugarbeets

In 1968, herbicides were applied on 850,000 acres of sugarbeets, or on approximately 60 percent of the 1.4 million acres harvested (tables 1, 3, and 4). Of the treated acres, 635,000 received only preemergence treatment at a cost of $9.48 per acre; 125,000 received postemergence treatment only ($6.93 per acre); and 90,000 received both preemergence and postemergence treatments ($14 per acre) (tables 4, 5, and 48). Farmers treated 78 percent of the treated acreage with their own equipment, and custom operators treated the remaining 22 percent (tables 3 and 48). The cost of herbicides used in sugarbeets, including cost of application, was $8.1 million (tables 2 and 3).

Both preemergence and postemergence treatments used in 1968 appeared more effective than those used in 1965. Combinations of preemergence and postemergence treatments were rated good in five States and fair in three. No State rated them poor. One State in the northeastern region, two in the north central region, and six in the western region reported an urgent need for better herbicides. The herbicide usage trend was up in 11 States, stationary in six, and down in none. Problems of herbicides persisting in soil in 1968

appeared to be about the same as in 1965. In 1968, seven States reported problems of persistence, and 10 reported no major problems with persistence. Persistence problems were most severe in the northeastern region, but affected only 5 percent of the total acreage treated in the United States (tables 5, 7, and 49.

Weeds listed among the five most important in at least four States were: pigweeds, lambsquarters, foxtails, barnyardgrass, mustards, kochia, and wild oat. There were no changes in this list since 1965 (tables 50 and 51).

Sugarcane

In 1968, herbicides were applied on 582,000 acres of sugarcane, or on approximately 95 percent of the 613,000 acres harvested (tables 1, 3, and 4). Of the treated areas, 118,000 received only preemergence treatment at a cost of $18.42 per acre; 271,000 received postemergence treatment only ($13.35 per acre); and 193,000 received both preemergence and postemergence treatments ($14.64 per acre) (tables 4, 5, and 52). Farmers treated 90 percent of these acreages with their own equipment, while custom operators treated the remaining 10 percent (tables 3 and 52). The cost of herbicides used in sugarcane, including the cost of application, was $8.6 million (tables 2 and 3).

Preemergence treatments were rated good in Florida and Louisiana and fair in Hawaii. Postemergence treatments were rated good in Florida and fair in the other two states. Combinations of preemergence and postemergence treatments were rated good in Florida, fair in Louisiana, and were not reported as being used in Hawaii. Florida and Hawaii reported an urgent need for better herbicides. The herbicide usage trend was up in Florida and Louisiana and stationary in Hawaii. There were no indications of problems of herbicides persisting in soil in 1968 in any of these three States (tables 5, 7, and 53).

Weeds listed among the five most important in Florida, Hawaii, and Louisiana were: crabgrasses, johnsongrass, threelobe morningglory, panicums, alexandergrass, guineagrasses, napiergrass, paragrass, and wingleaf passionflower. Sugarcane was not included in this survey in 1965 (tables 54 and 55).

Legume Seed Crops

In 1968, herbicides were applied on 246,000 acres of legume seed crops. This was approximately 18 percent of the 1.3 million acres harvested (tables 1, 3, and 4). Of the treated acres, 77,000 received only preemergence treatment at a cost of $7.94 per acre; 165,000 received postemergence treatment only ($8.24 per acre); and 4,000 received both preemergence and postemergence treatments ($13.75 per acre) (tables 4, 5, and 56). Farmers treated 69 percent of these acreages with their own equipment, while custom operators treated the remaining 31 percent (tables 3 and 56). The cost of herbicides used in legume seed crops, including cost of application, was $2.0 million (tables 2 and 3).

Preemergence treatments used in 1968 were rated fair in eight States. Postemergence treatments were rated good in five States and fair in 10. Combinations of preemergence and postemergence treatments were rated good in one State and fair in two. None of the treatments were considered poor.

Pennsylvania, Minnesota, California, Oregon, Utah, and Wyoming reported an urgent need for better herbicides. The herbicide usage trend was up in 13 States, stationary in six, and down in none. Problems of herbicides persisting in soil in 1968 were reported by two States, and 17 States reported no major problems with persistence. Persistence problems affected 6 percent of the acreage treated (tables 6, 7, and 57).

Weeds listed among the five most important in at least four States were: pigweeds, crabgrasses, quackgrass, foxtails, ragweeds, thistles, johnsongrass, bromes, docks, wild carrot, white cockle, dodders, plantains, and yellow rocket. Weeds of legume and grass seed crops were not reported separately for the 1965 survey, so that no comparisons have been made between 1968 and 1965 (tables 58 and 59).

Grass Seed Crops

In 1968, herbicides were applied on 212,000 acres of grass seed crops, or on approximately 40 percent of the 527,000 acres harvested (tables 1, 3, and 4). Of the treated acres, 153,000 received only preemergence treatment at a cost of $7.94 per acre; 56,000 received postemergence treatment only ($3.16 per acre); and 3,000 received both preemergence and postemergence treatments ($6.67 per acre) (tables 4, 5, and 60). Farmers treated 76 percent of these acreages with their own equipment, while custom operators treated the remaining 24 percent (tables 3 and 60). The cost of herbicides used in grass seed crops, including the cost of application, was $1.4 million (tables 2 and 3).

Preemergence treatments used in 1968 were rated good in the two States that reported their use. Postemergence treatments were rated good in eight States, fair in four, and poor in one. Combinations of preemergence and postemergence treatments were rated good in the three States that reported their use. Minnesota and Virginia reported an urgent need for better herbicides. The herbicide usage trend was up in eight States, stationary in five, and down in none. Problems of herbicides persisting in soil in 1968 were reported by Texas and Idaho, while 11 States reported no major problems with persistence. Persistence problems affected only 2 percent of the total acreage treated (tables 6, 7, and 61).

Weeds listed among the five most important in at least three States were: pigweeds, crabgrasses, lambsquarters, quackgrass, foxtails, thistles, annual bluegrass, bromes, kochia, wild garlic, plantains, and sandburs. In the report on the 1965 survey, weeds of grass seed crops and legume seed crops were combined, so that no comparisons between 1968 and 1965 for these crops have been made (tables 62 and 63).

Table 12.--Corn: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	30	8	4	9.00	7.00	15.00	45	55
Delaware	120	20	20	6.00	7.50	10.00	75	25
Maine	12	2	---	7.00	2.50	----	80	20
Maryland	300	95	30	5.50	2.25	6.00	90	10
Massachusetts	26	3	2	9.00	5.00	10.00	35	65
New Hampshire	3	1	1	8.50	8.50	8.50	60	40
New Jersey	50	10	5	4.50	3.00	6.50	80	20
New York	400	300	50	8.00	5.00	11.00	70	30
Pennsylvania	350	560	---	7.50	7.50	----	70	30
Rhode Island	2	1	1	8.00	5.00	10.00	90	10
Vermont	10	10	1	9.00	9.00	18.00	75	25
West Virginia	50	20	8	8.00	5.00	9.00	75	25
Northeastern	1,353	1,030	122	7.05	6.19	9.43	73	27
Illinois	4,000	2,300	2,300	4.00	1.50	5.50	75	25
Indiana	1,680	1,920	480	6.00	2.00	8.00	80	20
Iowa	4,000	3,000	2,000	4.00	1.50	5.50	90	10
Kansas	500	387	---	7.00	3.00	----	70	30
Michigan	400	1,000	---	6.00	4.75	----	55	45
Minnesota	1,800	500	1,400	4.50	2.00	6.50	70	30
Missouri	1,200	700	900	5.00	2.00	7.00	75	25
Nebraska	1,067	1,748	815	5.13	2.36	3.48	80	20
North Dakota	66	114	---	4.50	2.50	----	95	5
Ohio	880	1,600	600	4.75	1.70	6.50	75	25
South Dakota	400	1,400	25	6.00	1.70	7.00	60	40
Wisconsin	894	976	108	6.65	4.75	10.70	70	30
North Central	16,887	15,945	8,628	4.41	2.19	5.91	77	23
Alabama	200	70	250	5.00	3.00	6.50	90	10
Arkansas	1	10	5	8.00	3.00	11.00	99	1
Florida	25	75	---	4.50	1.50	----	50	50
Georgia	310	38	20	10.00	3.00	13.00	70	30
Kentucky	300	500	80	5.00	2.75	2.25	82	18
Louisiana	50	20	10	3.00	2.00	5.00	90	10
Mississippi	100	120	75	5.00	2.00	7.00	90	10
North Carolina	200	400	250	7.00	2.50	9.50	80	20
Oklahoma	20	5	---	5.50	1.75	----	95	5
South Carolina	90	55	150	10.00	3.00	11.00	75	25
Tennessee	320	85	10	8.50	2.50	10.00	60	40
Texas	140	12	10	5.25	2.25	7.50	40	60
Virginia	300	123	10	6.50	3.20	6.00	40	60
Southern	2,056	1,513	870	6.90	2.60	7.99	73	27
Arizona	1	1	---	5.00	3.00	----	75	25
California	10	100	5	7.00	5.00	12.00	60	40
Colorado	30	175	---	4.00	2.00	----	75	25
Idaho	6	26	1	9.00	3.00	12.00	60	40
Montana	10	30	---	3.50	2.00	----	95	5
New Mexico	4	1	---	8.00	8.00	----	100	--
Oregon	4	20	---	7.00	3.00	----	90	10
Utah	2	26	---	12.00	2.50	----	76	24
Washington	30	10	---	5.00	2.00	----	90	10
Wyoming	20	10	1	6.00	2.00	8.00	70	30
Hawaii	2	---	1	25.00	---	45.00	100	--
Western	119	399	8	5.78	2.92	15.62	74	26
United States	20,415	18,887	9,628	4.84	2.46	6.15	76	24

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 13.--Corn: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Fair	Fair	Fair	Sta.	Some	Yes	5
Delaware	Good	Good	Good	Sta.	Some	Yes	10
Maine	Good	Good	----	Sta.	Some	Yes	10
Maryland	Good	Fair	Good	Up	Some	Yes	1
Massachusetts	Good	Good	Good	Sta.	Some	Yes	5
New Hampshire	Good	Fair	Good	Up	Some	No	--
New Jersey	Good	Good	Good	Up	Some	No	--
New York	Good	Fair	Good	Up	Some	No	--
Pennsylvania	Good	Good	----	Up	Some	No	--
Rhode Island	Good	Fair	Good	Up	Some	No	--
Vermont	Good	Good	Good	Up	Some	No	--
West Virginia	Good	Fair	Fair	Up	Some	Yes	10
Northeastern	11-Good 1-Fair	6-Good 6-Fair	8-Good 2-Fair	8-Up 4-Sta.	12-Some	6-Yes 6-No	1
Illinois	Good	Good	Good	Up	Some	Yes	2
Indiana	Fair	Fair	Fair	Up	Some	Yes	--
Iowa	Good	Good	Good	Up	Some	Yes	20
Kansas	Good	Good	----	Up	Some	Yes	10
Michigan	Good	Good	----	Up	Some	Yes	3
Minnesota	Fair	Good	Good	Up	Some	Yes	10
Missouri	Good	Good	Good	Up	Some	Yes	40
Nebraska	Good	Good	Good	Up	Some	Yes	19
North Dakota	Fair	Fair	----	Up	Some	Yes	50
Ohio	Good	Good	Good	Up	Some	Yes	5
South Dakota	Good	Good	Good	Up	Some	Yes	5
Wisconsin	Good	Fair	Good	Up	Some	Yes	15
North Central	9-Good 3-Fair	9-Good 3-Fair	8-Good 1-Fair	12-Up	12-Some	12-Yes	12
Alabama	Good	Fair	Good	Up	Some	No	--
Arkansas	Good	Good	Good	Sta.	Little	No	--
Florida	Poor	Fair	----	Up	Some	No	--
Georgia	Good	Good	----	Up	Some	No	--
Kentucky	Good	Fair	Fair	Up	Some	Yes	30
Louisiana	----	Poor	Fair	Up	Some	No	--
Mississippi	Good	Good	Good	Up	Some	No	--
North Carolina	Good	Good	Good	Up	Some	No	--
Oklahoma	Good	Fair	----	Up	Some	Yes	70
South Carolina	Good	Good	Good	Up	Little	No	--
Tennessee	Good	Good	Good	Up	Some	No	5
Texas	Fair	Good	Good	Up	Urgent	Yes	60
Virginia	Fair	Fair	Fair	Up	Some	Yes	5
Southern	9-Good 2-Fair 1-Poor	7-Good 5-Fair 1-Poor	7-Good 3-Fair	12-Up 1-Sta.	1-Urgent 10-Some 2-Little	4-Yes 9-No	9
Arizona	Good	Good	----	Sta	Little	Yes	10
California	Fair	Good	Good	Up	Some	Yes	25
Colorado	Good	Fair	----	Up	Some	Yes	50
Idaho	Good	Good	Good	Up	Some	Yes	20
Montana	Good	Good	----	Up	Some	Yes	15
New Mexico	Good	Good	----	Up	Urgent	Yes	10
Oregon	Good	Good	----	Up	Little	Yes	--
Utah	Good	Fair	----	Up	Urgent	Yes	20
Washington	Good	Fair	----	Up	Some	Yes	30
Wyoming	Good	Good	Fair	Up	Some	Yes	70
Hawaii	Fair	----	Good	Up	Urgent	No	--
Western	9-Good 2-Fair	7-Good 3-Fair	3-Good 1-Fair	10-Up 1-Sta.	3-Urgent 6-Some 2-Little	10-Yes 1-No	35
United States	38-Good 8-Fair 1-Poor	29-Good 17-Fair 1-Poor	26-Good 7-Fair	42-Up 6-Sta.	4-Urgent 40-Some 4-Little	32-Yes 16-No	11

1/ Sta., stationary.

Table 14.--Corn: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Apple-of-Peru	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
*Barnyardgrass	14	4	2	1	7	8	436	4	2,553	2	30	3,019
Bermudagrass	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
Bindweeds	7	3	2	--	2	5	1,633	2	179	--	---	1,812
Burcucumber	1	1	--	--	--	--	---	1	10	--	---	10 1/
*Cockleburs	10	--	2	7	1	5	3,322	3	1,069	2	5,168	9,559
*Crabgrasses	21	8	3	9	1	10	2,786	9	5,006	2	1,144	8,936
Crotalaria	1	--	--	1	--	--	---	--	---	1	22	22
*Foxtails	19	2	12	1	4	12	30,773 2/	6	5,836 1/3/	1	52	36,661 1/2/3/
Horsenettle	2	2	--	--	--	1	60	1	19	--	---	79
Jimsonweed	2	1	--	--	1	2	108	--	---	--	---	108
*Johnsongrass	16	2	2	11	1	5	509	10	1,850	1	442	2,801
Junglerice	1	--	--	1	--	--	---	1	22	--	---	22
Kikuyugrass	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
Kochia	5	--	1	1	3	2	386	3	276	--	---	662
Lambsquarters	7	1	1	--	5	4	5,101	--	---	3	33	5,134
Milkweed	2	1	1	--	--	--	---	1	1,108	1	75	1,183
Millet, Texas	1	--	--	1	--	--	---	1	112	--	---	112
*Morningglories	9	--	--	9	--	3	466	5	1,069	1	445	1,980
Mustard, wild	1	--	1	--	--	1	476	--	---	--	---	476
*Nutsedges	17	10	4	3	--	3	55	13	3,501	1	1	3,557
Oat, wild	1	--	--	--	1	1	34	--	---	--	---	34
*Panicums	18	7	4	6	1	2	295	16	6,204 1/	--	---	6,499 1/
*Pigweeds	25	2	5	8	10	17	16,770	3	1,261	5	533	18,564
*Quackgrass	17	9	4	--	4	10	3,152	3	327	4	2,923	6,402
Ragweeds	3	1	1	1	--	3	1,387	--	---	--	---	1,387
Sandburs	3	--	--	--	3	1	3	2	242	--	---	245
Shattercane	1	--	1	--	--	1	283	--	---	--	---	283
Sicklepod	3	--	--	3	--	2	758	1	502	--	---	1,260
Signalgrass	2	--	--	2	--	--	---	2	181	--	---	181
Smartweeds	3	--	2	--	1	3	7,670	--	---	--	---	7,670
Sorghum (crop)	1	--	--	--	1	1	8	--	---	--	---	8
Sunflower	2	--	1	--	1	--	---	1	1,000	1	15	1,015
Switchgrass	1	--	--	--	1	--	---	1	29	--	---	29
Thistle, Canada	7	2	4	--	1	4	3,793	3	361	--	---	4,154
Velvetleaf	5	--	5	--	--	3	8,883	2	2,930	--	---	11,813
Watergrasses	1	--	--	--	1	1	8	--	---	--	---	8
Witchgrass	5	3	2	--	--	--	---	5	3,363	--	---	3,363

1/ No acreages estimated for problem weeds in Hawaii.
2/ Includes 635,000 acres of yellow foxtail in North Dakota but does not include 635,000 acres of green foxtail.
3/ Includes 2,693,000 acres of green foxtail in Wisconsin but does not include 943,000 acres of giant foxtail.

Table 15.--Corn: Five most important weeds listed alphabetically, by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
Northeastern:		Pct.			Pct.			Pct.			Pct.			Pct.	
Connecticut	Barnyardgrass	20	Up	Crabgrass	40	Up	Panicum, fall	15	Up	Quackgrass	15	Down	Witchgrass	15	Up
Delaware	Bindweed, field	10	Sta.	Crabgrass	50	Sta.	Jimsonweed	20	Sta.	Nutsedge	10	Sta.	Panicum, fall	10	Up
Maine	Barnyardgrass	30	Sta.	Crabgrass	20	Up	Nutsedge	15	Sta.	Quackgrass	75	Sta.	----------	--	--
Maryland	Foxtail	50	Sta.	Johnsongrass	35	Up	Panicum, fall	30	Up	Pigweed	60	Sta.	Thistle, Canada	15	Up
Massachusetts	Barnyardgrass	20	Sta.	Crabgrass	85	Sta.	Nutsedge, yellow	15	Up	Panicum, fall	35	Up	Quackgrass	25	Sta.
New Hampshire	Barnyardgrass	15	Sta.	Bindweed	5	Sta.	Crabgrass	50	Up	Nutsedge	10	Down	Quackgrass	20	Sta.
New Jersey	Bindweed	15	Sta.	Burcucumber	10	Up	Horsenettle	20	Up	Nutsedge	35	Sta.	Panicum, fall	60	Up
New York	Crabgrass, large	40	Up	Milkweed	10	Down	Nutsedge, yellow	20	Up	Quackgrass	50	Sta.	Witchgrass	40	Up
Pennsylvania	Foxtail, giant	20	Up	Horsenettle	5	Sta.	Nutsedge	30	Up	Quackgrass	50	Down	Thistle, Canada	15	Up
Rhode Island	Crabgrass	50	Up	Nutsedge	10	Up	Panicum, fall	75	Up	Quackgrass	25	Sta.	Ragweed, common	50	Sta.
Vermont	Crabgrass	30	Up	Lambsquarters	25	Down	Nutsedge, yellow	45	Up	Pigweed, redroot	25	Down	Quackgrass	40	Down
West Virginia	Johnsongrass	20	Up	Nutsedge	30	Up	Panicum, fall	25	Up	Quackgrass	40	Sta.	Witchgrass	25	Up
North Central:															
Illinois	Foxtail, giant	50	Sta.	Nutsedge	10	Up	Panicum, fall	15	Up	Smartweed	25	Sta.	Velvetleaf	25	Sta.
Indiana	Johnsongrass	6	Up	Nutsedge	5	Up	Panicum, fall	10	Up	Quackgrass	2	Sta.	Thistle, Canada	1	Sta.
Iowa	Cocklebur	50	Down	Foxtails	90	Sta.	Smartweed, Pa.	50	Sta.	Sunflowers	10	Up	Velvetleaf	60	Sta.
Kansas	Barnyardgrass	15	Sta.	Crabgrass	60	Sta.	Foxtail	50	Sta.	Shattercane	20	Sta.	Velvetleaf	20	Sta.
Michigan	Bindweed, field	10	Up	Crabgrass	30	Up	Nutsedge	20	Up	Panicum, fall	40	Up	Witchgrass	30	Up
Minnesota	Foxtail	100	Sta.	Lambsquarters, common	90	Sta.	Pigweed, redroot	90	Sta.	Quackgrass	50	Sta.	Thistle, Canada	60	Sta.
Missouri	Cocklebur, common	75	Sta.	Foxtail, giant	90	Up	Pigweed, redroot	90	Sta.	Velvetleaf	50	Up	Witchgrass	80	Up
Nebraska	Barnyardgrass	50	Up	Crabgrass	75	Up	Foxtail	100	Sta.	Panicum, fall	50	Up	Pigweed	100	Sta.
North Dakota	Foxtail, green	100	Sta.	Foxtail, yellow	100	Sta.	Kochia	40	Up	Mustard, wild	75	Sta.	Pigweed, redroot	40	Sta.
Ohio	Foxtails	40	Sta.	Johnsongrass	5	Up	Nutsedge, yellow	12	Up	Quackgrass	10	Up	Thistle, Canada	20	Sta.
South Dakota	Bindweed, field	50	Sta.	Foxtails	100	Sta.	Milkweed	35	Up	Ragweed, common	25	Sta.	Thistle, Canada	3	Up
Wisconsin	Foxtail, giant	35	Up	Foxtail, green	100	Up	Pigweed, redroot	100	Sta.	Quackgrass	85	Down	Velvetleaf	50	Up
Southern:															
Alabama	Cocklebur	50	Up	Crabgrass	100	Sta.	Johnsongrass	35	Sta.	Morningglory	70	Up	Sicklepod	85	Sta.
Arkansas	Cocklebur, common	10	Sta.	Crabgrass, large	70	Sta.	Johnsongrass	25	Sta.	Morningglory	20	Up	Pigweed	15	Sta.
Florida	Cocklebur	15	Sta.	Crotalaria	5	Down	Millet, Texas	25	Up	Morningglory, cypr. 2/	10	Up	Sicklepod	20	Sta.
Georgia	Cocklebur	40	Up	Johnsongrass	30	Up	Morningglory	20	Up	Pigweed	40	Up	Sicklepod	30	Up
Kentucky	Crabgrass	60	Up	Foxtail, giant	30	Sta.	Johnsongrass	35	Up	Panicum, fall	20	Up	Pigweed	40	Sta.
Louisiana	Barnyardgrass	75	Sta.	Crabgrass	75	Sta.	Johnsongrass	30	Up	Morningglory	80	Up	Signalgrass	75	Up
Mississippi	Cocklebur	40	Down	Crabgrass	60	Sta.	Johnsongrass	30	Sta.	Pigweed	25	Sta.	Signalgrass	15	Up
North Carolina	Cocklebur	40	Sta.	Morningglory	30	Down	Nutsedge	50	Up	Panicum, fall	20	Up	Ragweed	40	Sta.
Oklahoma	Crabgrass	95	Sta.	Johnsongrass	40	Up	Junglerice	30	Up	Kochia	20	Up	Pigweed	95	Sta.
South Carolina	Cocklebur	65	Sta.	Johnsongrass	20	Sta.	Nutsedge	25	Up	Panicum, fall	5	Up	Pigweed	50	Up
Tennessee	Crabgrass	90	Down	Johnsongrass	20	Up	Morningglory	25	Sta.	Panicum, fall	30	Up	Pigweed	40	Sta.
Texas	Crabgrass	75	Down	Johnsongrass	75	Down	Morningglory	30	Sta.	Panicum, Texas	50	Sta.	Pigweed	75	Down
Virginia	Crabgrass	65	Sta.	Johnsongrass	5	Up	Morningglory	15	Sta.	Nutsedge	15	Up	Panicum, fall	15	Up
Western:															
Arizona	Johnsongrass	30	Sta.	Pigweed	50	Sta.	Sorghum (crop)	30	Sta.	Watergrasses 3/	30	Sta.	----------	--	--
California	Barnyardgrass	80	Up	Crabgrass, large	50	Sta.	Jimsonweed	25	Sta.	Pigweed, redroot	70	Sta.	Smartweed	25	Sta.
Colorado	Foxtail	85	Sta.	Kochia	75	Sta.	Lambsquarters	75	Sta.	Pigweed, redroot	80	Up	Sandbur	50	Up
Idaho	Barnyardgrass	40	Sta.	Pigweed, redroot	80	Sta.	Quackgrass	10	Up	Sandbur	10	Up	Thistle, Canada	10	Sta.
Montana	Foxtail, green	75	Up	Kochia	50	Sta.	Lambsquarters	50	Sta.	Oats, wild	50	Sta.	Pigweed, redroot	50	Sta.
New Mexico	Barnyardgrass	23	Down	Cocklebur	10	Up	Lambsquarters	24	Down	Pigweed	30	Down	Sunflowers	30	Down
Oregon	Barnyardgrass	60	Down	Lambsquarters	15	Down	Pigweed	50	Down	Quackgrass	20	Sta.	Sandbur	10	Sta.
Utah	Barnyardgrass	50	Up	Bindweed, field	25	Up	Kochia	15	Up	Pigweed, redroot	95	Sta.	Quackgrass	20	Up
Washington	Barnyardgrass	50	Sta.	Lambsquarters	75	Sta.	Pigweed, redroot	75	Sta.	Quackgrass	40	Sta.	----------	--	--
Wyoming	Barnyardgrass	50	Sta.	Bindweed, field	25	Sta.	Foxtail, green	90	Down	Pigweed, redroot	75	Down	Switchgrass	50	Up
Hawaii	Apple-of-Peru	60	Sta.	Bermudagrass	20	Sta.	Foxtail, bristly	25	Up	Kikuyugrass	60	Up	Panicum species	40	Sta.

1/ Sta., stationary.
2/ Morningglory, cypressweed.
3/ Watergrass complex.

Table 16.--Cotton: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Missouri	100	100	109	6.00	5.00	11.00	80	20
North Central	100	100	109	6.00	5.00	11.00	80	20
Alabama	280	---	250	4.00	----	6.00	90	10
Arkansas	50	---	900	6.00	----	15.00	95	5
Florida	8	---	10	6.00	----	10.00	80	20
Georgia	30	20	357	13.00	7.00	12.00	80	20
Kentucky	1	2	---	5.00	2.10	----	98	2
Louisiana	---	---	400	----	----	11.00	90	10
Mississippi	70	20	990	4.00	3.00	19.00	75	25
North Carolina	75	20	80	9.00	4.00	13.00	80	20
Oklahoma	200	30	20	4.00	3.50	6.50	80	20
South Carolina	150	35	200	7.00	5.00	12.00	90	10
Tennessee	180	10	145	5.00	3.00	7.00	90	10
Texas	2,000	750	1,000	7.00	4.00	11.00	30	70
Virginia	4	1	1	6.00	2.50	8.00	90	10
Southern	2,948	888	4,353	6.46	4.05	13.37	62	38
Arizona	70	70	80	6.00	8.00	14.00	80	20
California	300	100	50	7.50	5.00	12.50	75	25
Nevada	2	---	---	8.00	----	----	100	--
New Mexico	30	25	20	7.50	7.50	15.00	95	5
Western	402	195	150	7.24	6.40	13.63	79	21
United States	3,450	1,183	4,612	6.54	4.52	13.32	64	36

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 17.--Cotton: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Missouri	Good	Good	Good	Sta.	Some	No	---
North Central	1-Good	1-Good	1-Good	1-Sta.	1-Some	1-No	---
Alabama	Good	Good	Good	Up	Some	No	---
Arkansas	Good	Good	Good	Sta.	Some	Yes	5
Florida	Fair	Fair	Fair	Up	Some	No	---
Georgia	Good	Good	---	Up	Some	No	---
Kentucky	Good	Fair	---	Up	Some	No	---
Louisiana	Good	Good	Good	Sta.	Little	No	---
Mississippi	Good	Good	Good	Sta.	Some	Yes	5
North Carolina	Fair	Fair	Good	Up	Some	No	---
Oklahoma	Fair	Fair	Good	Up	Little	Yes	60
South Carolina	Good	Good	Good	Up	Some	Yes	20
Tennessee	Good	Good	Good	Up	Some	No	---
Texas	Good	Good	Good	Up	Some	No	---
Virginia	Fair	Fair	Fair	Sta.	Some	No	---
Southern	9-Good 4-Fair	8-Good 5-Fair	9-Good 2-Fair	9-Up 4-Sta.	11-Some 2-Little	4-Yes 9-No	4
Arizona	Good	Good	Good	Up	Some	Yes	10
California	Good	Good	Good	Up	Some	Yes	35
Nevada	Good	---	---	Up	Some	No	---
New Mexico	Good	Good	---	Up	Some	Yes	5
Western	4-Good	3-Good	2-Good	4-Up	4-Some	3-Yes 1-No	25
United States	14-Good 4-Fair	12-Good 5-Fair	12-Good 2-Fair	13-Up 5-Sta.	16-Some 2-Little	7-Yes 11-No	5

1/ Sta., stationary.

Table 18.--Cotton: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Anoda, spurred	1	--	--	--	1	--	---	1	23	--	---	23
*Barnyardgrass	3	--	--	1	2	--	---	1	5	2	492	497
Beggarweed, Florida	1	--	--	1	--	--	---	1	1	--	---	1
Bermudagrass	2	--	--	2	--	1	1	--	---	1	2	3
*Cockleburs	10	--	1	7	2	4	1,457	4	272	2	776	2,505
*Crabgrasses	6	--	--	6	--	1	13	--	---	5	1,781	1,794
Flaveria	1	--	--	--	1	--	---	1	9	--	---	9
Foxtails	1	--	1	--	--	--	---	1	171	--	---	171
Groundcherry	2	--	--	--	2	--	---	1	172	1	89	261
*Johnsongrass	15	--	1	10	4	5	471	2	219	8	1,726	2,416
*Morningglories	7	--	--	6	1	6	1,173	1	118	--	---	1,291
*Nutsedges	9	--	--	8	1	3	261	6	1,680	--	---	1,941
*Panicums	2	--	--	2	--	--	---	1	152	1	2,888	3,040
*Pigweeds	6	--	1	4	1	3	3,813	--	---	3	505	4,318
Purslane, common	1	--	--	1	--	--	---	1	2,888	--	---	2,888
*Ragweeds	3	--	--	3	--	1	57	2	351	--	---	408
Redvine 1/	1	--	--	1	--	1	332	--	---	--	---	332
*Sidas	7	--	1	6	--	1	57	6	2,016	--	---	2,073
Spurge, hyssop	1	--	--	--	1	--	---	1	30	--	---	30
Trumpetcreeper (see Redvine)												
Watergrasses (complex)	1	--	--	--	1	1	148	--	---	--	---	148

1/ Redvine and trumpetcreeper were included in the same report from Mississippi.

Table 19.--Cotton: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
North Central:															
Missouri	Cocklebur, common	75	Sta.	Foxtails	90	Up	Johnsongrass	50	Down	Pigweed, redroot	90	Sta.	Sida, prickly	90	Up
Southern:															
Alabama	Cocklebur	90	Sta.	Johnsongrass	30	Down	Morningglory	25	Sta.	Nutsedge	30	Up	Sida, prickly	70	Up
Arkansas	Cocklebur, common	60	Sta.	Crabgrass, large	80	Down	Johnsongrass	20	Down	Morningglory	65	Sta.	Sida, prickly	75	Up
Florida	Barnyardgrass	40	Up	Beggarweed, Florida	5	Up	Bermudagrass	15	Down	Crabgrass	100	Sta.	Nutsedge	8	Up
Georgia	Cocklebur	40	Up	Johnsongrass	30	Sta.	Morningglory	30	Up	Nutsedge	40	Up	Ragweed	50	Up
Louisiana	Crabgrass	75	Down	Johnsongrass	30	Sta.	Morningglory	35	Sta.	Nutsedge	25	Sta.	Sida species	60	Up
Mississippi	Cocklebur	60	Down	Johnsongrass	30	Down	Nutsedge	30	Up	Redvine, etc. 2/	30	Sta.	Sida, prickly	40	Up
North Carolina	Cocklebur	60	Down	Johnsongrass	25	Up	Nutsedge	30	Sta.	Ragweed	30	Sta.	Sida, prickly	30	Sta.
Oklahoma	Cocklebur	25	Up	Crabgrass	95	Down	Johnsongrass	60	Sta.	Panicum, Texas	40	Up	Pigweed	90	Sta.
South Carolina	Cocklebur	75	Sta.	Morningglory	20	Sta.	Nutsedge	30	Sta.	Pigweed	80	Down	Ragweed	45	Up
Tennessee	Crabgrass	90	Down	Johnsongrass	20	Down	Morningglory	25	Sta.	Pigweed	40	Down	Sida	15	Up
Texas	Johnsongrass	20	Down	Nutsedge	20	Up	Panicum, browntop	70	Down	Pigweed	80	Sta.	Purslane, common	70	Up
Virginia	Bermudagrass	20	Sta.	Crabgrass	60	Down	Johnsongrass	10	Sta.	----	--	--	----	--	--
Western:															
Arizona	Groundcherry	30	Down	Johnsongrass	10	Down	Pigweed	30	Down	Spurge, hyssop	10	Up	Watergrass	50	Sta.
California	Barnyardgrass	70	Down	Groundcherry	25	Up	Johnsongrass	25	Up	Morningglory 3/	15	Sta.	Nutsedge	30	Up
Nevada	Cocklebur	50	Up	Johnsongrass	50	Sta.	----	--	--	----	--	--	----	--	--
New Mexico	Anoda, spurred	15	Up	Barnyardgrass	8	Down	Cocklebur	12	Up	Flaveria	6	Up	Johnsongrass	12	Down

1/Sta., stationary.
2/Reported as redvine and trumpetcreeper.
3/Morninglory, threelobe.

Table 20.--Sorghum: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Massachusetts	---	1	---	---	5.00	---	50	50
Pennsylvania	5	15	---	4.00	7.00	---	90	10
Northeastern	5.	16	---	4.00	6.88	---	88	12
Illinois	4	2	1	4.00	1.00	5.00	80	20
Indiana	1	2	---	5.00	2.00	---	50	50
Iowa	1	10	11	1.50	1.50	3.00	95	5
Kansas	407	1,000	---	7.00	3.00	---	70	30
Minnesota	1	1	1	4.00	2.00	6.00	100	--
Missouri	60	56	25	6.00	2.00	8.00	75	25
Nebraska	387	896	128	9.93	2.21	4.12	80	20
South Dakota	60	183	---	6.00	1.70	---	60	40
North Central	921	2,150	166	8.08	2.52	4.65	74	26
Alabama	2/	1	---	5.00	4.00	---	100	--
Arkansas	5	20	20	5.00	2.00	7.00	99	1
Florida	1	5	2	4.00	1.50	5.50	80	20
Kentucky	1	1	---	5.00	2.00	---	95	5
Louisiana	10	20	---	3.00	2.00	---	90	10
Mississippi	15	20	20	5.00	2.00	7.00	80	20
North Carolina	3	3	2	7.00	2.50	9.50	90	10
Oklahoma	90	40	---	4.50	1.50	---	90	10
South Carolina	4	2	7	8.00	2.25	8.50	95	5
Tennessee	3	1	---	8.50	3.00	---	60	40
Texas	1,750	1,500	250	5.50	3.50	10.00	50	50
Virginia	1	10	---	6.25	4.25	---	85	15
Southern	1,883	1,623	301	5.45	3.39	9.53	53	47
Arizona	10	80	---	4.00	5.00	---	50	50
California	2	90	---	9.00	5.00	---	50	50
Colorado	5	40	---	4.00	2.00	---	50	50
New Mexico	55	15	---	6.00	6.50	---	95	5
Hawaii	1	---	2/	25.00	---	45.00	100	--
Western	73	225	2/	5.83	4.57	45.00	61	39
United States	2,882	4,014	467	6.30	3.00	7.80	63	37

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 21.--Sorghum: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Massachusetts	---	Good	---	Sta.	Some	No	---
Pennsylvania	Good	Good	---	Up	Some	No	---
Northeastern	1-Good	2-Good	---	1-Up 1-Sta.	2-Some	2-No	---
Illinois	Good	Good	Good	Sta.	Little	No	---
Indiana	Fair	Fair	---	Up	Some	Yes	---
Iowa	Good	Good	Good	Up	Some	No	---
Kansas	Good	Fair	---	Up	Some	Yes	20
Minnesota	Fair	Fair	Good	Sta.	Little	Yes	10
Missouri	Good	Good	Good	Sta.	Some	No	---
Nebraska	Good	Good	Good	Up	Some	No	---
South Dakota	Good	Good	---	Up	Some	Yes	5
North Central	6-Good 2-Fair	5-Good 3-Fair	5-Good	5-Up 3-Sta.	6-Some 2-Little	4-Yes 4-No	9
Alabama	Fair	Fair	---	Up	Some	No	---
Arkansas	Good	Good	Good	Up	Some	No	---
Florida	Fair	Fair	Fair	Up	Some	No	---
Kentucky	Good	Poor	---	Sta.	Little	No	---
Louisiana	Good	Good	---	Up	Some	No	---
Mississippi	Good	Good	Good	Up	Some	No	---
North Carolina	Fair	Good	Good	Sta.	Some	No	---
Oklahoma	Fair	Fair	---	Up	Some	Yes	80
South Carolina	Good	Good	Good	Sta.	Some	Yes	20
Tennessee	Good	---	---	Up	Some	No	---
Texas	Fair	Good	Good	Up	Urgent	Yes	50
Virginia	Fair	Fair	---	Up	Some	Yes	5
Southern	6-Good 6-Fair	6-Good 4-Fair 1-Poor	5-Good 1-Fair	9-Up 3-Sta.	1-Urgent 10-Some 1-Little	4-Yes 8-No	49
Arizona	Fair	Good	---	Up	Some	Yes	10
California	Fair	Good	---	Up	Some	Yes	35
Colorado	Fair	Fair	---	Sta.	Some	Yes	20
New Mexico	Good	Good	---	Up	Urgent	Yes	75
Hawaii	Fair	---	Good	Up	Urgent	No	---
Western	1-Good 4-Fair	3-Good 1-Fair	1-Good	4-Up 1-Sta.	2-Urgent 3-Some	4-Yes 1-No	34
United States	14-Good 12-Fair	16-Good 8-Fair 1-Poor	11-Good 1-Fair	19-Up 8-Sta.	3-Urgent 21-Some 3-Little	12-Yes 15-No	31

1/ Sta., stationary.

Table 22.--Sorghum: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary No.	Stationary Area 1,000 acres	Up No.	Up Area 1,000 acres	Down No.	Down Area 1,000 acres	1,000 acres
Apple-of-Peru	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
*Barnyardgrass	7	--	2	2	3	3	1,209	3	778 1/	1	55	2,042 1/
Bermudagrass	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
*Bindweeds	4	--	1	--	3	3	363	1	(1/)	--	---	363 1/
*Cocklebur	9	--	2	5	2	5	245	2	93	2	40	378
*Crabgrasses	11	1	2	7	1	7	3,235	4	1,579 1/	--	---	4,814 1/
Crotalaria	1	--	--	1	--	--	---	--	---	1	(1/)	(1/)
Dallisgrass	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
Flixweed	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
*Foxtails	10	2	6	1	1	8	4,383 1/	2	5 1/	--	---	4,888 1/
Goosegrass	1	--	--	1	--	1	14	--	---	--	---	14
*Johnsongrass	13	--	--	10	3	3	87	9	6,393 1/	1	24	6,504 1/
Junglerice	2	--	--	2	--	1	5,522	1	234	--	---	5,756
Kikuyugrass	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
Kochia	3	--	1	--	2	1	44	2	426 1/	--	---	470 1/
*Lambsquarters	4	3	--	--	1	3	(1/)	--	---	1	227	227 1/
Millet, Texas	1	--	--	1	--	--	---	1	(1/)	--	---	(1/)
*Morninglories	3	--	--	7	1	4	92	2	52	2	71	215
Nutsedges	3	2	--	1	--	1	1	2	(1/)	--	---	1 1/
*Panicums	3	1	1	1	--	2	2,945 1/	1	982	--	---	3,927 1/
*Pigweeds 2/	21	3	5	9	4	15	10,285 1/	3	53	3	546	10,884 1/
Quackgrass	1	1	--	--	--	--	---	--	---	1	(1/)	(1/)
Ragweeds	3	1	--	2	--	3	28 1/	--	---	--	---	28 1/
Sandburs	2	--	--	--	2	--	---	2	481	--	---	481
Sesbania, hemp	1	--	--	1	--	1	20	--	---	--	---	20
Shattercane	2	--	1	1	--	--	---	2	1,103	--	---	1,103
Sicklepod	2	--	--	2	--	1	20	1	(1/)	--	---	20 1/
Signalgrass	1	--	--	1	--	--	---	1	10	--	---	10
Smartweeds	2	1	1	--	--	2	5 1/	--	---	--	---	5 1/
Sunflowers	2	--	1	1	--	1	20	--	---	1	2,945	2,965
Thistle, Russian	1	--	1	--	--	1	44	--	---	--	---	44
Velvetleaf	3	--	3	--	--	3	254	--	---	--	---	254
Watergrasses (complex)	1	--	--	--	1	1	177	--	---	--	---	177
Witchgrass	1	--	1	--	--	--	---	1	261	--	---	261

1/ Figures do not include estimates of less than 500 acres for weeds reported in Massachusetts, New Jersey, Pennsylvania, Florida, Utah, and Hawaii.
2/ Includes amaranths.

Table 23.--Sorghum: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1964

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Massachusetts---	Crabgrass----------	70	Up	Foxtails----------	45	Sta.	Lambsquarters-------	80	Sta.	Pigweed, redroot----	80	Sta.	Smartweed----------	30	Sta.
New Jersey------	Lambsquarters-------	40	Sta.	Nutsedge----------	20	Up	Panicum----------	15	Sta.	Pigweed----------	45	Sta.	Ragweed----------	60	Sta.
Pennsylvania----	Foxtail, yellow-----	25	Sta.	Lambsquarters-------	30	Sta.	Nutsedge----------	30	Up	Pigweed----------	40	Sta.	Quackgrass---------	45	Down
North Central:															
Illinois--------	Cocklebur----------	10	Sta.	Foxtail, giant------	30	Sta.	Pigweed----------	20	Sta.	Smartweed----------	30	Sta.	Velvetleaf---------	10	Sta.
Iowa------------	Foxtails----------	20	Sta.	Sunflower----------	20	Sta.	Velvetleaf---------	20	Sta.	----------	--	--	----------	--	--
Kansas----------	Barnyardgrass-------	20	Sta.	Crabgrass----------	50	Sta.	Foxtail----------	50	Sta.	Pigweed----------	90	Sta.	Shattercane--------	20	Up
Missouri--------	Cocklebur, common---	75	Sta.	Foxtails----------	95	Sta.	Pigweed, redroot----	95	Sta.	Velvetleaf---------	80	Sta.	Witchgrass---------	90	Up
Nebraska--------	Barnyardgrass-------	30	Up	Crabgrass----------	75	Up	Foxtail----------	100	Sta.	Panicum, fall-------	50	Up	Pigweed----------	100	Sta.
South Dakota----	Bindweed, field-----	5	Sta.	Foxtails----------	100	Sta.	Kochia----------	10	Sta.	Pigweed----------	10	Sta.	Thistle, Russian----	10	Sta.
Southern:															
Alabama---------	Crabgrass----------	100	Sta.	Johnsongrass -----	60	Up	Morningglory-------	50	Sta.	Sesbania, hemp------	50	Sta.	Sicklepod----------	50	Sta.
Arkansas--------	Cocklebur, common---	75	Up	Crabgrass, large----	85	Sta.	Johnsongrass-------	15	Sta.	Morningglory-------	75	Sta.	Pigweed----------	40	Up
Florida---------	Amaranth, spiny-----	5	Up	Cocklebur----------	15	Sta.	Crotalaria---------	5	Down	Millet, Texas-------	20	Up	Sicklepod----------	20	Up
Kentucky--------	Crabgrass----------	60	Up	Foxtail, giant------	30	Up	Pigweed----------	40	Sta.	----------	--	--	----------	--	--
Louisiana-------	Barnyardgrass-------	75	Sta.	Crabgrass----------	75	Sta.	Johnsongrass-------	40	Up	Morningglory-------	80	Up	Pigweed----------	40	Up
Mississippi-----	Cockleburs---------	25	Down	Johnsongrass--------	75	Up	Signalgrass--------	15	Up	----------	--	--	----------	--	--
North Carolina--	Cocklebur----------	20	Sta.	Johnsongrass--------	25	Up	Morningglory-------	80	Down	Pigweed----------	80	Down	Ragweed----------	30	Sta.
Oklahoma--------	Barnyardgrass-------	20	Up	Crabgrass----------	95	Sta.	Johnsongrass-------	80	Up	Junglerice---------	25	Up	Shattercane--------	25	Up
South Carolina--	Cocklebur----------	50	Sta.	Johnsongrass--------	30	Up	Morningglory-------	25	Sta.	Pigweed----------	40	Sta.	Ragweed----------	40	Sta.
Tennessee-------	Crabgrass----------	90	Sta.	Goosegrass---------	60	Sta.	Johnsongrass-------	30	Up	Morningglory-------	60	Up	Pigweed----------	85	Sta.
Texas-----------	Johnsongrass--------	50	Up	Junglerice---------	75	Sta.	Panicum, browntop---	40	Sta.	Pigweed----------	50	Sta.	Sunflower----------	40	Down
Virginia--------	Crabgrass----------	20	Sta.	Johnsongrass--------	5	Sta.	Morningglory-------	10	Sta.	Nutsedge----------	5	Sta.	Pigweed----------	10	Sta.
Western:															
Arizona---------	Cocklebur----------	10	Down	Johnsongrass--------	10	Down	Morningglory-------	10	Down	Pigweed----------	75	Sta.	Watergrass---------	75	Sta.
California------	Barnyardgrass-------	80	Sta.	Bindweed, field-----	15	Sta.	Crabgrass, large----	25	Up	Pigweed, redroot----	50	Sta.	----------	--	--
Colorado--------	Bindweed, field-----	50	Sta.	Kochia----------	75	Up	Lambsquarters-------	40	Down	Pigweed, redroot----	75	Down	Sandbur----------	75	Up
New Mexico------	Barnyardgrass-------	15	Down	Cocklebur----------	8	Up	Johnsongrass-------	20	Sta.	Pigweed----------	20	Down	Sandbur----------	15	Up
Utah------------	Barnyardgrass-------	60	Up	Bindweed, field-----	20	Up	Flixweed----------	30	Up	Johnsongrass-------	25	Up	Kochia----------	40	Up
Hawaii----------	Apple-of-Peru-------	60	Up	Bermudagrass--------	60	Sta.	Dallisgrass--------	40	Up	Foxtail, bristly----	20	Up	Kikuyugrass--------	15	Up

1/ Sta., stationary.

Table 24.--Soybeans: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Delaware	80	---	---	3.00	----	----	80	20
Maryland	90	1	---	4.50	4.50	----	90	10
New Jersey	28	---	---	3.00	----	----	90	10
New York	2	---	---	8.00	----	----	70	30
Pennsylvania	11	---	---	9.00	----	----	85	15
Northeastern	211	1	---	4.00	4.50	----	86	14
Illinois	3,930	30	37	5.00	3.00	8.00	75	25
Indiana	1,361	60	30	5.00	2.00	7.00	100	---
Iowa	3,000	5	500	5.00	1.50	7.50	90	10
Kansas	260	4	---	8.00	4.00	----	80	20
Michigan	200	---	---	5.00	----	----	100	---
Minnesota	1,500	10	10	5.00	4.00	8.00	70	30
Missouri	913	10	913	8.00	2.00	10.00	75	25
Nebraska	287	12	309	6.49	2.94	5.33	85	15
North Dakota	45	4	---	5.00	2.50	----	99	1
Ohio	650	15	3	6.50	3.50	8.50	80	20
South Dakota	45	1	---	6.00	4.00	----	60	40
Wisconsin	74	---	---	8.85	----	----	70	30
North Central	12,265	151	1,802	5.43	2.62	8.40	82	18
Alabama	159	15	10	5.00	2.50	7.00	90	10
Arkansas	500	50	1,500	3.50	2.00	5.50	90	10
Florida	20	---	---	4.00	----	----	80	20
Georgia	190	43	2	5.00	5.00	8.00	90	10
Kentucky	100	20	10	7.00	3.00	10.00	95	5
Louisiana	410	600	315	5.00	3.50	5.50	90	10
Mississippi	500	300	800	5.00	2.50	7.50	80	20
North Carolina	300	100	85	6.00	3.50	9.50	90	10
Oklahoma	30	2	1	4.50	3.00	7.50	98	2
South Carolina	288	227	515	6.00	2.50	7.00	90	10
Tennessee	380	100	90	5.00	2.00	7.00	90	10
Texas	100	10	5	7.00	2.00	11.00	60	40
Virginia	99	5	2/	7.25	8.00	10.00	90	10
Southern	3,967	1,472	3,333	5.13	3.02	6.38	88	12
United States	15,543	1,624	5,135	5.35	2.98	7.09	84	16

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 25.--Soybeans: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and Region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Delaware	Good	Fair	---	Up	Some	No	---
Maryland	Fair	Fair	---	Up	Some	No	---
New Jersey	Good	---	---	Up	Some	No	---
New York	Good	---	---	Sta.	Little	Yes	80
Pennsylvania	Fair	Fair	---	Up	Some	No	---
Northeastern	3-Good 2-Fair	3-Fair	---	4-Up 1-Sta.	4-Some 1-Little	1-Yes 4-No	1
Illinois	Good	Fair	Good	Up	Some	Yes	1
Indiana	Fair	Poor	Fair	Up	Urgent	No	---
Iowa	Good	Good	Good	Up	Some	No	---
Kansas	Fair	Fair	---	Up	Urgent	No	---
Michigan	Good	---	---	Up	Some	No	---
Minnesota	Fair	Poor	Fair	Up	Some	No	---
Missouri	Good	Fair	Good	Up	Some	No	---
Nebraska	Fair	Fair	Fair	Up	Urgent	Yes	3
North Dakota	Fair	Fair	---	Up	Some	No	---
Ohio	Fair	Poor	Fair	Up	Urgent	No	---
South Dakota	Good	Fair	---	Up	Some	No	---
Wisconsin	Fair	---	---	Up	Some	No	---
North Central	5-Good 7-Fair	1-Good 6-Fair 3-Poor	3-Good 4-Fair	12-Up	4-Urgent 8-Some	2-Yes 10-No	---
Alabama	Fair	Fair	Fair	Up	Urgent	No	---
Arkansas	Good	Fair	Good	Up	Urgent	No	---
Florida	Good	Good	---	Sta.	Some	No	---
Georgia	Fair	Fair	Fair	Up	Urgent	No	---
Kentucky	Fair	Poor	Fair	Up	Urgent	No	---
Louisiana	Fair	Fair	Good	Up	Some	No	---
Mississippi	Fair	Fair	Fair	Up	Urgent	No	---
North Carolina	Fair	Fair	Good	Up	Urgent	No	---
Oklahoma	Fair	Fair	Fair	Up	Some	Yes	40
South Carolina	Fair	Fair	Fair	Up	Urgent	No	10
Tennessee	Poor	Fair	Fair	Up	Urgent	No	---
Texas	Good	Good	Good	Up	Some	No	---
Virginia	Fair	Fair	Fair	Up	Urgent	No	---
Southern	3-Good 9-Fair 1-Poor	2-Good 10-Fair 1-Poor	4-Good 8-Fair	12-Up 1-Sta.	9-Urgent 4-Some	1-Yes 12-No	1
United States	11-Good 18-Fair 1-Poor	3-Good 19-Fair 4-Poor	7-Good 12-Fair	28-Up 2-Sta.	13-Urgent 16-Some 1-Little	4-Yes 26-No	1

1/ Sta., stationary.

Table 26.--Soybeans: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Barnyardgrass	3	--	1	2	--	2	167	1	598	--	---	765
Beggarweed, Florida	1	--	--	1	--	--	---	1	6	--	---	6
*Cockleburs	19	--	6	13	--	7	4,634	11	8,881	1	583	14,098
*Crabgrasses	6	--	1	5	--	4	3,314	1	622	1	1,133	5,069
*Foxtails	18	6	11	1	--	9	6,940 1/	7	8,078 2/3/	2	482	15,500 1/2/3/
*Jimsonweed	7	3	2	2	--	3	224	4	1,121	--	---	1,345
*Johnsongrass	12	2	1	9	--	7	2,603	4	978	1	1,795	5,376
Lambsquarters	5	3	2	--	--	3	3,383	--	---	2	5 2/	3,388 2/
*Morningglories	15	3	3	9	--	7	2,961 2/	8	2,348	--	---	5,309 2/
Mustard, wild	2	--	2	--	--	2	195	--	---	--	---	195
*Nutsedges	8	3	2	3	--	--	---	8	824	--	---	824
*Pigweeds	17	2	6	9	--	12	10,356 2/	4	2,632	1	281	13,269 2/
Pusley, Florida	1	--	--	1	--	1	127	--	---	--	---	127
Quackgrass	2	1	1	--	--	1	2	1	959	--	---	961
Ragweeds	8	4	--	4	--	2	100	6	1,288	--	---	1,388
Sesbania, hemp	2	--	--	2	--	1	223	1	848	--	---	1,071
Sicklepod	3	--	--	3	--	1	390	2	268	--	---	658
Signalgrass	1	--	--	1	--	1	1,060	--	---	--	---	1,060
Smartweeds	5	--	5	--	--	4	6,586	1	332	--	---	6,918
Sunflowers	2	--	2	--	--	1	60	1	500	--	---	560
Thistle, Canada	3	--	3	--	--	2	2,259	1	9	--	---	2,268
*Velvetleaf	12	2	10	--	--	7	8,362	4	2,157	1	(2/)	10,519 2/
Witchgrass	1	1	--	--	--	--	---	1	4	--	---	4

1/ Does not include duplication of 220,000 acres reported by North Dakota for both green and yellow foxtails.
2/ Figures do not include estimates of less than 500 acres for weeds reported in West Virginia.
3/ Includes estimates of 161,000 acres of green foxtail in Wisconsin but does not include 64,000 acres of giant foxtail.

Table 27.--Soybeans: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1966

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Delaware	Foxtail	25	Up	Jimsonweed	50	Sta.	Johnsongrass	10	Up	Morningglory	75	Sta.	Ragweed	50	Up
Maryland	Foxtail	60	Sta.	Jimsonweed	35	Up	Johnsongrass	30	Up	Morningglory	50	Up	Ragweed	40	Up
New Jersey	Foxtail	45	Sta.	Jimsonweed	15	Sta.	Nutsedge	35	Up	Ragweed	60	Up	Velvetleaf	20	Sta.
New York	Foxtail, yellow	70	Down	Lambsquarters	80	Down	Nutsedge, yellow	20	Up	Quackgrass	30	Sta.	Witchgrass	70	Up
Pennsylvania	Foxtail, giant	15	Up	Lambsquarters	75	Sta.	Nutsedge	20	Up	Pigweed	70	Sta.	Ragweed	30	Sta.
West Virginia	Foxtails	35	Up	Lambsquarters	30	Down	Morningglory	10	Sta.	Pigweed, rough	45	Sta.	Velvetleaf	40	Down
North Central:															
Illinois	Foxtail, giant	60	Sta.	Morningglory	25	Sta.	Pigweed	30	Sta.	Smartweed	25	Sta.	Velvetleaf	30	Sta.
Indiana	Cocklebur	10	Sta.	Jimsonweed	25	Up	Johnsongrass	1	Sta.	Morningglory	2	Sta.	Velvetleaf	25	Up
Iowa	Cockleburs	50	Sta.	Foxtails	50	Up	Smartweed, Pa.	20	Sta.	Sunflower	50	Up	Velvetleaf	30	Sta.
Kansas	Cocklebur	25	Sta.	Foxtail	50	Down	Morningglory	15	Sta.	Pigweed	30	Sta.	Velvetleaf	30	Sta.
Michigan	Jimsonweed	30	Sta.	Nutsedge	70	Up	Velvetleaf	35	Sta.		--	--		--	--
Minnesota	Cocklebur	40	Up	Quackgrass	30	Up	Smartweed, Pa.	50	Sta.	Thistle, Canada	60	Sta.	Velvetleaf	30	Up
Missouri	Cocklebur, common	95	Sta.	Foxtail, giant	80	Up	Lambsquarters, common	90	Sta.	Pigweed, redroot	95	Sta.	Velvetleaf	75	Sta.
Nebraska	Crabgrass	75	Up	Foxtail	100	Sta.	Pigweed	100	Sta.	Smartweed	40	Up	Velvetleaf	40	Up
North Dakota	Foxtail, green	100	Sta.	Foxtail, yellow	100	Sta.	Lambsquarters, common	60	Sta.	Mustard, wild	75	Sta.	Pigweed, redroot	75	Sta.
Ohio	Foxtails	60	Sta.	Nutsedge, yellow	10	Up	Smartweed	60	Sta.	Thistle, Canada	15	Sta.	Velvetleaf	10	Sta.
South Dakota	Cocklebur	15	Sta.	Foxtails	100	Sta.	Mustard, wild	10	Sta.	Sunflower	20	Sta.	Thistle, Canada	3	Up
Wisconsin	Barnyardgrass	65	Sta.	Foxtail, giant	40	Up	Foxtail, green	100	Up	Pigweed, redroot	100	Sta.	Velvetleaf	65	Up
Southern:															
Alabama	Cocklebur	90	Up	Johnsongrass	85	Sta.	Morningglory	80	Up	Jesbania, hemp	40	Sta.	Sicklepod	70	Sta.
Arkansas	Barnyardgrass	15	Up	Cocklebur, common	80	Up	Crabgrass, large	50	Sta.	Johnsongrass	45	Down	Pigweed	40	Sta.
Florida	Beggarweed, Florida	5	Up	Cocklebur	25	Up	Nutsedge	5	Up	Pusley, Florida	100	Sta.	Sicklepod	25	Up
Georgia	Cocklebur	60	Up	Johnsgrass	30	Sta.	Morningglory	50	Up	Pigweed	50	Up	Sicklepod	50	Up
Kentucky	Cocklebur	15	Sta.	Foxtail, giant	40	Sta.	Morningglory	30	Up	Pigweed	40	Sta.	Ragweed, giant	20	Up
Louisiana	Cocklebur	35	Up	Crabgrass	70	Sta.	Johnsongrass	60	Up	Morningglory	70	Up	Pigweed	85	Up
Mississippi	Cocklebur	80	Up	Johnsongrass	60	Up	Pigweed	75	Sta.	Jesbania, hemp	40	Up	Signalgrass	50	Sta.
North Carolina	Cocklebur	60	Down	Jimsonweed	20	Up	Morningglory	80	Sta.	Nutsedge	25	Up	Ragweed	70	Up
Oklahoma	Cocklebur	40	Up	Crabgrass	95	Sta.	Johnsongrass	80	Sta.	Morningglory	35	Up	Pigweed	90	Sta.
South Carolina	Cocklebur	70	Up	Morningglory	20	Up	Nutsedge	25	Up	Pigweed	75	Up	Ragweed	35	Up
Tennessee	Cocklebur	50	Up	Crabgrass	95	Down	Johnsongrass	40	Sta.	Morningglory	20	Sta.	Pigweed	40	Up
Texas	Barnyardgrass	20	Sta.	Cocklebur	20	Sta.	Crabgrass	45	Sta.	Johnsongrass	20	Sta.	Pigweed	90	Down
Virginia	Cocklebur	20	Up	Jimsonweed	25	Up	Johnsongrass	10	Up	Morningglory	45	Up	Ragweed	25	Sta.

1/ Sta., stationary.

Table 28.--Wheat: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Delaware	---	5	---	---	3.00	---	95	5
Maryland	---	8	---	---	1.50	---	98	2
New York	---	4	---	---	5.00	---	90	10
Pennsylvania	---	45	---	---	4.50	---	65	35
West Virginia	---	2	---	---	3.00	---	90	10
Northeastern	---	64	---	---	3.99	---	74	26
Illinois	---	13	---	---	1.50	---	80	20
Indiana	---	20	---	---	1.50	---	80	20
Iowa	---	5	5	---	1.50	1.50	95	5
Kansas	---	787	---	---	1.75	---	20	80
Michigan	---	500	---	---	2.50	---	45	55
Minnesota	25	700	100	4.00	2.00	6.00	60	40
Missouri	---	25	25	---	2.00	4.00	75	25
Nebraska	---	67	---	---	2.50	---	40	60
North Dakota	215	7,500	---	4.00	1.75	---	60	40
Ohio	---	200	---	---	1.50	---	80	20
South Dakota	4	2,000	5	4.50	1.35	5.85	35	65
Wisconsin	---	13	---	---	1.80	---	80	20
North Central	244	11,830	135	4.01	1.73	5.46	53	47
Alabama	---	5	---	---	2.00	---	85	15
Florida	---	5	---	---	1.50	---	80	20
Kentucky	---	30	---	---	1.00	---	98	2
Louisiana	---	70	---	---	2.25	---	90	10
Mississippi	---	10	---	---	2.00	---	100	---
North Carolina	---	44	---	---	2.50	---	80	20
Oklahoma	---	130	---	---	1.50	---	60	40
South Carolina	---	50	---	---	2.25	---	65	35
Tennessee	---	10	---	---	2.00	---	90	10
Texas	---	500	---	---	2.00	---	70	30
Virginia	---	16	---	---	3.50	---	60	40
Southern	---	870	---	---	1.98	---	72	28
California	2	175	---	6.00	3.00	---	25	75
Colorado	---	600	---	---	2.00	---	30	70
Idaho	13	572	5	6.00	3.00	9.00	30	70
Montana	225	2,600	200	1.50	3.00	1.50	60	40
New Mexico	---	3	---	---	3.50	---	100	---
Nevada	---	5	---	---	1.00	---	50	50
Oregon	100	600	---	8.00	3.00	---	50	50
Utah	---	62	---	---	4.31	---	50	50
Washington	---	2,800	---	---	3.00	---	60	40
Wyoming	---	150	---	---	1.50	---	30	70
Western	340	7,567	205	5.61	2.90	1.68	53	47
United States	584	20,331	340	3.78	2.18	3.18	54	46

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 29.--Wheat: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Delaware	---	Good	---	Sta.	Some	No	---
Maryland	---	Fair	---	Sta.	Some	No	---
New York	---	Fair	---	Sta.	Urgent	Yes	90
Pennsylvania	---	Good	---	Up	Some	No	---
West Virginia	---	Fair	---	Sta.	Little	No	---
Northeastern	---	2-Good 3-Fair	---	1-Up 4-Sta.	1-Urgent 3-Some 1-Little	1-Yes 4-No	6
Illinois	---	Fair	---	Sta.	Some	No	---
Indiana	---	Fair	---	Sta.	Some	No	---
Iowa	---	Good	Good	Sta.	Little	No	---
Kansas	---	Good	---	Sta.	Some	No	---
Michigan	---	Good	---	Sta.	Some	No	---
Minnesota	Fair	Good	Good	Up	Some	No	---
Missouri	---	Good	Good	Sta.	Little	No	---
Nebraska	---	Good	---	Up	Some	No	---
North Dakota	Fair	Good	---	Sta.	Some	No	---
Ohio	---	Good	---	Sta.	Some	No	---
South Dakota	Good	Good	Good	Up	Some	No	---
Wisconsin	---	Good	---	Sta.	Some	No	---
North Central	1-Good 2-Fair	10-Good 2-Fair	4-Good	3-Up 9-Sta.	10-Some 2-Little	12-No	---
Alabama	---	Fair	---	Sta.	Some	No	---
Florida	---	Fair	---	Up	Some	No	---
Kentucky	---	Good	---	Down	Some	No	---
Louisiana	---	Good	---	Up	Little	No	---
Mississippi	---	Good	---	Sta.	Little	No	---
North Carolina	---	Fair	---	Sta.	Some	No	---
Oklahoma	---	Fair	---	Up	Urgent	No	---
South Carolina	---	Good	---	Sta.	Some	No	---
Tennessee	---	Good	---	Up	Some	No	---
Texas	---	Fair	---	Up	Some	No	---
Virginia	---	Good	---	Up	Some	No	---
Southern	---	6-Good 5-Fair	---	6-Up 4-Sta. 1-Down	1-Urgent 8-Some 2-Little	11-No	---
California	Fair	Good	---	Sta.	Some	No	---
Colorado	---	Good	---	Sta.	Some	No	---
Idaho	Fair	Good	Fair	Up	Some	No	---
Montana	Fair	Fair	Fair	Up	Some	No	---
Nevada	---	Good	---	Up	Some	No	---
New Mexico	---	Good	---	Sta.	Some	No	---
Oregon	Good	Good	---	Up	Urgent	No	---
Utah	---	Fair	---	Up	Urgent	No	---
Washington	---	Good	---	Sta.	Some	Yes	5
Wyoming	---	Good	---	Up	Some	No	---
Western	1-Good 3-Fair	6-Good 2-Fair	2-Fair	6-Up 4-Sta.	2-Urgent 8-Some	1-Yes 9-No	2
United States	2-Good 5-Fair	26-Good 12-Fair	4-Good 2-Fair	16-Up 21-Sta. 1-Down	4-Urgent 29-Some 5-Little	2-Yes 36-No	1

1/ Sta., stationary.

Table 30.--Wheat: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Barley, little	1	--	--	1	--	1	21	--	---	--	---	21
Barnyardgrass	2	--	1	--	1	2	964	--	---	--	---	964
*Bindweeds	7	--	2	2	3	4	4,940	3	2,320	--	---	7,760
*Bromes 1/	14	--	4	3	7	8	6,343	6	8,261	--	---	14,604
*Buckwheat, wild	7	--	4	--	3	4	8,711	3	3,564	--	---	12,275
Buttercup, testiculate	1	--	--	--	1	--	---	1	26	--	---	26
Chamomile, corn	3	3	--	--	--	2	90	1	64	--	---	154
Chickweeds	5	2	--	3	--	3	84	2	77	--	---	161
Cockles	4	3	--	1	--	3	84	--	---	1	5	89
Darnel	2	--	--	2	--	2	28	--	---	--	---	28
Docks	5	--	--	5	--	2	112	3	164	--	---	276
Eveningprimroses	2	--	--	2	--	1	22	1	765	--	---	787
Fiddlenecks	3	--	--	--	3	2	2,169	1	114	--	---	2,283
Fleabane, rough	1	--	1	--	--	--	---	1	639	--	---	639
Flixweed	1	--	--	--	1	1	235	--	---	--	---	235
Foxtails	3	--	3	--	--	3	1,660	--	---	--	---	1,660
*Garlic, wild	14	4	4	6	--	12	1,221	2	318	--	---	1,539
Geranium, Carolina	1	--	--	1	--	1	27	--	---	--	---	27
Goatgrass	1	--	--	--	1	--	---	1	455	--	---	455
Gromwells	1	--	--	--	1	--	---	1	455	--	---	455
*Henbit	7	--	1	6	--	4	690	3	1,673	--	---	2,363
Knapweed, Russian	1	--	--	--	1	--	---	1	2	--	---	2
Knawel	4	2	--	2	--	3	120	1	40	--	---	160
Kochia	4	--	3	--	1	2	2,555	2	2,386	--	---	4,941
Ladysthumb	1	--	1	--	--	1	18	--	---	--	---	18
Lambsquarters	2	--	1	--	1	2	63	--	---	--	---	63
Mayweed	1	--	--	1	--	--	---	1	8	--	---	8
*Mustards	18	1	6	7	4	11	4,909	4	3,084	3	6,724	14,717
Nutsedges	1	1	--	--	--	--	---	1	79	--	---	79
*Oat, wild	7	--	3	--	4	5	8,436	2	3,968	--	---	12,404
Peas, wild winter	1	--	--	1	--	1	42	--	---	--	---	42
*Pennycress	5	--	3	--	2	5	3,064	--	---	--	---	3,064
Pepperweeds	5	2	1	2	--	3	1,679	1	4	1	(2/)	1,683 2/
Pigweeds	3	--	1	1	1	1	1,895	--	---	2	2,244	4,139
Quackgrass	3	1	2	--	--	3	582	--	---	--	---	582
Radish, wild	4	2	1	1	--	3	77	--	---	1	3	80
Ragweeds	3	1	--	2	--	2	1,551	1	276	--	---	1,827
Rockets	2	--	1	--	1	2	293	--	---	--	---	293
Ryegrass	1	--	--	--	1	1	196	--	---	--	---	196
Shepherdspurse	3	2	1	--	--	2	309	1	6	--	---	315
Smartweeds	5	--	5	--	--	3	420	1	254	1	490	1,164
Sunflowers	4	--	1	--	3	1	196	1	1	2	160	357
Tansymustards	3	--	--	1	2	3	2,712	--	---	--	---	2,712
*Thistle, Russian	5	--	1	--	4	3	3,425	1	3	1	116	3,544
*Thistles 3/	6	1	3	1	1	2	117	4	964	--	---	1,081
Vetch	2	--	--	2	--	2	61	--	---	--	---	61
Whitetop	1	--	--	--	1	--	---	1	2	--	---	2
Wintercress	1	--	1	--	--	--	---	--	---	1	152	152
Witchgrass	1	--	1	--	--	1	790	--	---	--	---	790

1/ Includes cheat.
2/ Less than 500 acres estimated for pepperweeds reported by Indiana.
3/ Does not include Russian thistle.

Table 31.--Wheat: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Delaware	Radish, wild	5	Sta.	----------	--	--	----------	--	--	----------	--	--	----------	--	--
Maryland	Chamomile, corn	50	Sta.	Chickweed	30	Sta.	Cockle, corn	35	Sta.	Garlic, wild	40	Sta.	Knawel	30	Up
New Jersey	Chamomile, corn	55	Sta.	Cockle, white	40	Sta.	Garlic, wild	20	Sta.	Knawel	10	Sta.	----------	--	--
New York	Chamomile, corn	30	Up	Garlic, wild	10	Sta.	Pepperweed, field	60	Sta.	Radish, wild	30	Sta.	Shepherdspurse	80	Sta.
Pennsylvania	Garlic, wild	15	Sta.	Nutsedge	20	Up	Quackgrass	45	Sta.	Ragweed	70	Up	Thistle, Canada	15	Up
West Virginia	Chickweed, common	10	Sta.	Cockle, corn	30	Down	Mustard, wild	20	Down	Pepperweed, field	25	Up	Shepherdspurse	35	Up
North Central:															
Illinois	Cheat	35	Sta.	Garlic, wild	25	Sta.	Henbit	20	Sta.	Mustard	20	Sta.	Smartweed	25	Sta.
Indiana	Garlic, wild	10	Sta.	Pepperweed, field	--	--	Smartweed	5	Sta.	Thistle, Canada	10	Sta.	Wintercress	15	Down
Iowa	Foxtails	10	Sta.	Pennycress, field	5	Sta.	Smartweed, Pa.	5	Sta.	Sunflower	10	Up	----------	--	--
Kansas	Bromegrasses, annual	20	Sta.	Buckwheat, wild	10	Sta.	Kochia	10	Sta.	Muatard, wild	20	Sta.	Thistle, Russian	15	Sta.
Michigan	Garlic, wild	20	Sta.	Quackgrass	40	Sta.	----------	--	---	----------	--	--	----------	--	--
Minnesota	Buckwheat, wild	25	Up	Foxtail	50	Sta.	Mustard, wild	75	Sta.	Oats, wild	20	Sta.	Smartweed, Pa.	25	Up
Missouri	Barnyardgrass	75	Sta.	Fleabane, rough	50	Up	Foxtails	90	Sta.	Pennycress, field	60	Sta.	Shepherdspurse	50	Sta.
Nebraska	Brome, downy	90	Sta.	Kochia	50	Sta.	Pennycress, field	40	Sta.	Pigweed	60	Sta.	Witchgrass	25	Sta.
North Dakota	Bindweed, field	40	Sta.	Buckwheat, wild	75	Sta.	Kochia	30	Up	Mustard, wild	85	Down	Oats, wild	85	Sta.
Ohio	Garlic, wild	10	Sta.	Mustard, wild	15	Sta.	Rocket, yellow	15	Sta.	Smartweed	40	Down	Thistle, Canada	12	Up
South Dakota	Bindweed, field	30	Sta.	Brome, downy	70	Sta.	Buckwheat, wild	40	Up	Oats, wild	70	Up	Thistle, Canada	12	Up
Wisconsin	Ladysthumb	30	Sta.	Lambsquarters, common	100	Sta.	Mustard, wild	40	Sta.	Quackgrass	85	Sta.	Radish, wild	20	Sta.
Southern:															
Alabama	Chickweed	50	Up	Dock, curly	90	Up	Garlic, wild	90	Up	Henbit	60	Up	Mustard, wild	55	Sta.
Arkansas	Bromes	25	Sta.	Dock, curly	10	Sta.	Garlic, wild	15	Sta.	Henbit	30	Sta.	Mustard, wild	30	Sta.
Florida	Eveningprimrose 2/	40	Sta.	Geranium, Carolina	50	Sta.	Mustard, wild	5	Down	Pepperweed	40	Sta.	Radish, wild	5	Down
Kentucky	Cockle	10	Sta.	Garlic, wild	65	Sta.	Ragweed	10	Sta.	----------	--	--	----------	--	--
Louisiana	Darnel	25	Sta.	Dock, curly	40	Up	Henbit	10	Up	Mustard, wild	20	Sta.	Vetch	20	Sta.
Mississippi	Cheat	5	Sta.	Darnel	1	Sta.	Mustard	1	Sta.	Peas, wild winter	10	Sta.	Vetch	10	Sta.
Oklahoma	Bindweed, field	50	Up	Cheat	40	Up	Henbit	30	Up	Mustard, wild	20	Up	Pigweed	40	Down
South Carolina	Barley, little	20	Sta.	Chickweed, common	20	Up	Dock	25	Up	Garlic, wild	20	Sta.	Thistle, blessed	15	Sta.
Tennessee	Dock, curly	20	Sta.	Garlic, wild	80	Up	Henbit	70	Sta.	Knawel	30	Sta.	Mustard, wild	20	Sta.
Texas	Bindweed, field	25	Sta.	Eveningprimrose	20	Up	Pepperweed	40	Sta.	Ragweed	40	Sta.	Tansymustard	40	Sta.
Virginia	Chickweed	25	Sta.	Garlic, wild	40	Sta.	Henbit	20	Sta.	Knawel	20	Sta.	Mayweed	5	Up
Western:															
California	Bindweed, field	25	Up	Fiddleneck, Douglas-	30	Up	Oats, wild	25	Sta.	Rocket, London	30	Sta.	Tansymustard	20	Sta.
Colorado	Brome, downy	70	Up	Buckwheat, wild	30	Up	Mustard, blue	70	Up	Oats, wild	35	Sta.	Thistle, Russian	90	Sta.
Idaho	Brome, downy	40	Up	Mustards	50	Up	Oats, wild	60	Sta.	Pennycress, field	50	Sta.	Thistle, Canada	20	Up
Montana	Brome, downy	60	Up	Buckwheat, wild	60	Up	Goatgrass	10	Up	Gromwell	10	Up	Oats, wild	50	Up
Nevada	Brome, downy	30	Sta.	Knapweed, Russian	15	Up	Thistle, Russian	20	Up	Whitetop	15	Up	----------	--	--
New Mexico	Barnyardgraas	2	Sta.	Kochia	5	Up	Lambsquarters	1	Sta.	Sunflower	5	Down	----------	--	--
Oregon	Bindweed	10	Sta.	Brome, downy	60	Up	Fiddleneck	80	Sta.	Mustard, blue	5	Up	Ryegrasa	20	Sta.
Utah	Bindweed, field	25	Up	Buttercup, testic. 3/	10	Up	Flixweed	90	Sta.	Sunflower, common	75	Sta.	Thistle, Russian	85	Sta.
Washington	Brome, downy	25	Sta.	Fiddleneck, coast	50	Sta.	Mustard, tumble	50	Sta.	Pennycress, field	15	Sta.	Tansymustard	40	Sta.
Wyoming	Brome, [illegible]	60	Sta.	Buckwheat, wild	40	Sta.	Pigweed, redroot	40	Down	Sunflower	50	Down	Thistle, Russian	40	Down

1/Sta., stationary.
2/Eveningprimrose, cutleaf.
3/Buttercup, teaticulate.

Table 32.--Other small grains: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Delaware	---	5	---	----	3.00	----	95	5
Maryland	---	5	---	----	1.50	----	98	2
Massachusetts	---	2	---	----	4.00	----	75	25
New Jersey	---	18	---	----	1.75	----	75	25
New York	---	200	---	----	3.00	----	80	20
Pennsylvania	---	310	---	----	4.50	----	80	20
Vermont	---	2	---	----	3.50	----	75	25
West Virginia	---	6	---	----	3.00	----	90	10
Northeastern	---	548	---	----	3.80	----	80	20
Illinois	---	8	---	----	1.50	----	80	20
Indiana	---	4	---	----	3.00	----	100	--
Iowa	---	1,000	1,000	----	1.50	1.50	95	5
Kansas	---	369	---	----	2.00	----	10	90
Michigan	---	188	---	----	2.00	----	90	10
Minnesota	50	3,000	30 30	4.00	2.00	6.00	70	30
Missouri	---	32	---	----	2.00	----	50	50
Nebraska	---	102	---	----	2.00	----	50	50
North Dakota	40	1,500	---	4.00	1.75	----	60	40
Ohio	---	40	---	----	1.50	----	80	20
South Dakota	4	1,900	5	4.50	1.35	5.85	35	65
Wisconsin	---	726	---	----	1.55	----	80	20
North Central	94	8,869	1,035	4.02	1.72	1.65	65	35
Alabama	---	10	---	----	2.00	----	85	15
Arkansas	---	5	---	----	2.00	----	20	80
Florida	---	15	---	----	1.50	----	80	20
Georgia	---	25	---	----	3.00	----	10	90
Kentucky	---	10	---	----	1.00	----	99	1
Louisiana	---	30	---	----	2.25	----	90	10
Mississippi	---	10	---	----	2.00	----	100	--
North Carolina	---	40	---	----	2.50	----	80	20
Oklahoma	---	56	---	----	2.00	----	95	5
South Carolina	---	150	---	----	2.25	----	65	35
Tennessee	---	3	---	----	2.00	----	90	10
Texas	---	480	---	----	2.00	----	30	70
Virginia	---	18	---	----	3.50	----	60	40
Southern	---	852	- -	----	2.12	----	48	52
Arizona	---	5	---	----	2.00	----	80	20
California	5	900	---	6.00	3.00	----	25	75
Colorado	---	150	---	----	2.00	----	60	40
Idaho	2	175	2	6.00	2.00	8.00	40	60
Montana	300	600	300	4.00	1.50	5.50	70	30
Nevada	---	5	---	----	1.00	----	50	50
New Mexico	---	2	---	----	3.50	----	100	--
Oregon	20	300	---	8.00	3.00	----	60	40
Utah	1	107	---	6.00	2.31	----	81	19
Washington	50	200	20	6.00	2.00	8.00	70	30
Wyoming	---	150	---	----	1.50	----	50	50
Alaska	1	1	---	6.00	4.00	----	90	10
Western	379	2,595	322	4.52	2.33	5.67	54	46
United States	473	12,864	1,357	4.42	1.96	2.60	62	38

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 33.--Other small grains: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Delaware	---	Good	---	Sta.	Some	No	---
Maryland	---	Fair	---	Sta.	Some	No	---
Massachusetts	---	Good	---	Sta.	Some	No	---
New Jersey	---	Fair	---	Sta.	Little	No	---
New York	---	Good	---	Up	Some	Yes	---
Pennsylvania	---	Good	---	Up	Some	No	---
Vermont	---	Good	---	Down	Some	No	---
West Virginia	---	Fair	---	Up	Some	No	---
Northeastern	---	5-Good 3-Fair	---	3-Up 4-Sta. 1-Down	7-Some 1-Little	1-Yes 7-No	---
Illinois	---	Fair	---	Sta.	Some	No	---
Indiana	---	Fair	---	Sta.	Some	No	---
Iowa	---	Good	Good	Sta.	Little	No	---
Kansas	---	Fair	---	Sta.	Some	No	---
Michigan	---	Good	---	Sta.	Some	No	---
Minnesota	Fair	Good	Good	Up	Some	No	---
Missouri	---	Poor	---	Sta.	Little	No	---
Nebraska	---	Good	---	Up	Some	No	---
North Dakota	Fair	Good	---	Sta.	Some	No	---
Ohio	---	Good	---	Sta.	Some	No	---
South Dakota	Good	Good	Good	Up	Some	No	---
Wisconsin	---	Fair	---	Sta.	Some	No	---
North Central	1-Good 2-Fair	7-Good 4-Fair 1-Poor	3-Good	3-Up 9-Sta.	10-Some 2-Little	12-No	---
Alabama	---	Fair	---	Sta.	Some	No	---
Arkansas	---	Good	Good	Sta.	Little	No	---
Florida	---	Fair	---	Up	Some	No	---
Georgia	---	Good	---	Up	Little	No	---
Kentucky	---	Good	---	Down	Some	No	---
Louisiana	---	Good	---	Up	Little	No	---
Mississippi	Good	Good	Good	Up	Some	No	---
North Carolina	---	Fair	---	Sta.	Some	No	---
Oklahoma	---	Good	---	Up	Urgent	No	---
South Carolina	---	Good	---	Sta.	Some	No	---
Tennessee	---	Good	---	Up	Some	No	---
Texas	---	Fair	---	Up	Some	No	---
Virginia	---	Good	---	Up	Some	Yes	1
Southern	1-Good	9-Good 4-Fair	2-Good	8-Up 4-Sta. 1-Down	1-Urgent 9-Some 3-Little	1-Yes 12-No	---
Arizona	---	Good	---	Sta.	Some	No	---
California	Fair	Good	---	Sta.	Some	No	---
Colorado	---	Good	---	Sta.	Some	No	---
Idaho	Fair	Good	Fair	Sta.	Some	No	---
Montana	Fair	Fair	Fair	Up	Some	No	---
Nevada	---	Good	---	Up	Some	No	---
New Mexico	---	Good	---	Sta.	Some	No	---
Oregon	Good	Good	---	Up	Some	No	---
Utah	Good	Fair	---	Up	Urgent	No	---
Washington	Good	Good	---	Sta.	Some	No	---
Wyoming	---	Good	Good	Up	Some	No	---
Alaska	Good	Fair	---	Up	Some	No	---
Western	4-Good 3-Fair	9-Good 3-Fair	1-Good 2-Fair	6-Up 6-Sta.	1-Urgent 11-Some	12-No	---
United States	6-Good 5-Fair	30-Good 14-Fair 1-Poor	6-Good 2-Fair	20-Up 23-Sta. 2-Down	3-Urgent 37-Some 6-Little	2-Yes 43-No	---

1/ Sta., stationary.

Table 34.--Other small grains: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area 1,000 acres	No.	Area 1,000 acres	No.	Area 1,000 acres	1,000 acres
Barley, little	1	--	--	1	--	1	30	--	---	--	---	30
Barnyardgrass	2	--	1	--	1	2	219 1/	--	---	--	---	219 1/
*Bindweed	9	--	2	1	6	7	3,543	2	214	--	---	3,757
Bluegrass	1	--	--	--	1	--	---	1	(2/)	--	---	(2/)
Bromes	3	--	--	1	2	3	231	--	---	--	---	231
Buckwheat, wild	5	--	4	--	1	3	5,694	2	1,302	--	---	6,996
Chamomile, corn	2	2	--	--	--	2	94	--	---	--	---	94
Cheat	2	--	--	2	--	1	3	1	132	--	---	135
*Chickweeds	7	1	--	5	1	5	149 2/	2	187	--	---	336 2/
Cocklebur	1	--	1	--	--	1	1,000	--	---	--	---	1,000
Dockies	3	2	--	--	1	3	470	--	---	--	---	470
Crabgrasses	2	2	--	--	--	--	---	2	2 2/	--	---	2 2/
Darnel	2	--	--	2	--	2	9	--	--	--	---	9
Dock	5	--	--	5	--	2	20	3	71	--	---	91
Eveningprimrose, cutleaf	1	--	--	1	--	1	4	--	---	--	---	4
Fiddlenecks	2	--	--	--	2	1	198	1	596	--	---	794
Fleabane	1	--	1	--	--	--	---	1	146	--	---	146
*Foxtails	8	2	4	--	2	6	3,585 2/	2	325	--	---	3,910 2/
*Garlic, wild	1	-	2	3	--	3	4	2	73	--	---	498 2/
Geranium, Carolina	1	--	--	-	--	1	6	--	---	--	---	6
Horsenettle	1	--	--	--	1	--	---	1	(2/)	--	---	(2/)
*Henbit	8	--	--	7	1	4	181	4	303	--	---	484
Johnsongrass	1	--	--	--	1	1	18	--	---	--	---	18
Knapweed, Russian	1	--	--	--	1	--	---	1	3	--	---	3
Knawel	4	2	--	2	--	2	43	2	108	--	---	151
Kochia	4	--	2	--	2	2	584	2	1,225	--	---	1,309
Ladysthumb	1	--	1	--	--	1	545	--	---	--	---	545
*Lambsquarters	9	3	3	--	3	7	2,520 2/	1	10	1	(1/)	2,530 1/
Lettuce, prickly	2	--	1	--	1	2	212	--	---	--	---	212
Mayweed	1	--	--	1	--	--	---	1	10	--	---	10
Milkweed	1	--	1	--	--	--	---	1	456	--	---	456
*Mustards	19	1	5	10	3	12	4,262	4	394	3	3,873	8,529
Nutsedges	2	2	--	--	--	--	---	2	203	--	---	203
*Oat, wild	10	--	3	--	7	5	5,705	5	3,197	--	---	8,902
Peas, wild winter	1	--	--	1	--	1	6	--	---	--	---	6
Pennycress	3	--	1	--	2	3	414	--	---	--	---	414
Pepperweeds	3	--	1	2	--	1	4	1	34	--	---	60 3/
*Pigweeds	9	3	2	1	3	8	1,275 2/	1	238	--	---	1,513 2/
Quackgrass	3	1	2	--	--	1	1,635	--	---	2	530	2,165
Radish, wild	4	2	1	1	--	2	364	--	---	2	14	378
Ragweeds	3	-	--	--	--	--	---	-	-	-	-	-
[illegible]	-	--	--	--	-	-	-	--	---	--	---	215
[illegible]	1	--	--	--	1	1	119	--	---	--	---	119
Shepherdspurse	1	--	1	--	--	1	146	--	---	--	---	146
Smartweeds	6	2	4	--	--	4	535 2/	1	1,002	--	---	1,574 2/3/

See footnotes at end of table.

Table 34.--Other small grains: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968--continued

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Cowthistles	1	--	--	--	1	1	18	--	---	--	---	18
Spurry, corn	1	--	--	--	1	--	---	1	(2/)	--	---	(2/)
Sunflowers	3	--	1	--	2	1	75	1	1,000	1	1	1,076 2/
Tansymustards	3	--	--	--	3	3	537	--	---	--	---	537
Thistle, Russian	2	--	--	--	2	1	158	1	62	--	---	220
*Thistles	9	1	3	2	3	3	269	5	783	--	---	1,056 3/
Vetch	2	--	--	2	--	2	12	--	---	--	---	12
Whitetop	1	--	--	--	1	--	---	1	3	--	---	3
Wintercress	1	--	1	--	--	--	---	--	---	--	---	7 3/

1/ Figures do not include estimates of less than 500 acres for weeds reported in New Mexico.
2/ Acreage figures do not include estimates for weeds reported in Massachusetts and Alaska.
3/ Reports and acreage estimates for weeds in Indiana included in totals but not in figures for infestation trends.

Table 35.--Other small grains: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Delaware	Radish, wild	5	Sta.	----------	--	--	----------	--	--	----------	--	--	----------	--	--
Maryland	Chamomile, corn	50	Sta.	Chickweed	30	Sta.	Cockle, corn	35	Sta.	Garlic, wild	40	Sta.	Knawel	30	Up
Massachusetts	Crabgrass	70	Up	Foxtail	45	Sta.	Lambsquarters	85	Sta.	Pigweed, redroot	85	Sta.	Smartweed	30	Sta.
New Jersey	Chamomile, corn	55	Sta.	Cockle, white	40	Sta.	Garlic, wild	20	Sta.	Knawel	10	Sta.	----------	--	--
Pennsylvania	Lambsquarters	40	Sta.	Nutsedge	30	Up	Pigweed	25	Sta.	Quackgrass	55	Down	Thistle, Canada	10	Sta.
Vermont	Crabgrass	25	Up	Foxtail	20	Sta.	Mustard, wild	20	Sta.	Nutsedge, yellow	20	Up	Ragweed, common	25	Down
West Virginia	Lambsquarters	40	Up	Pigweed, redroot	30	Sta.	Radish, wild	50	Down	Ragweed, common	50	Up	Smartweed, Pa.	25	Sta.
North Central:															
Illinois	Foxtail, giant	40	Sta.	Lambsquarters	30	Sta.	Mustard, wild	25	Down	Quackgrass	20	Down	Smartweed	35	Sta.
Indiana	Garlic, wild	5	Sta.	Pepperweed, field	6	Sta.	Smartweed	10	Sta.	Thistle, Canada	1	Sta.	Wintercress	2	Sta.
Iowa	Cocklebur	100	Sta.	Foxtails	100	Sta.	Sunflower	100	Up	----------	--	--	----------	--	--
Minnesota	Buckwheat, wild	25	Up	Foxtail	50	Sta.	Mustard, wild	75	Sta.	Oats, wild	20	Sta.	Smartweed, Pa.	25	Up
Missouri	Barnyardgrass	75	Sta.	Fleabane, rough	50	Up	Foxtails	90	Sta.	Pennycress, field	60	Sta.	Shepherdspurse	50	Sta.
Nebraska	Buckwheat, wild	50	Up	Kochia	60	Sta.	Lambsquarters, common	25	Sta.	Lettuce, prickly	25	Sta.	Pigweed	95	Sta.
North Dakota	Bindweed, field	30	Sta.	Buckwheat, wild	75	Sta.	Kochia	25	Up	Mustard, wild	75	Down	Oats, wild	85	Sta.
Ohio	Garlic, wild	10	Sta.	Mustard, wild	30	Up	Pigweed	10	Sta.	Smartweed	35	Sta.	Thistle, Canada	25	Sta.
South Dakota	Bindweed, field	30	Sta.	Buckwheat, wild	40	Sta.	Milkweed	15	Up	Oats, wild	70	Up	Thistle, Canada	12	Up
Wisconsin	Ladysthumb	30	Sta.	Lambsquarters, common	100	Sta.	Mustard, wild	40	Sta.	Quackgrass	90	Sta.	Radish, wild	20	Sta.
Southern:															
Alabama	Chickweed	50	Up	Dock, curly	90	Up	Garlic, wild	90	Up	Henbit	60	Up	Mustard, wild	55	Sta.
Arkansas	Bromes	40	Sta.	Dock, curly	10	Sta.	Garlic, wild	15	Sta.	Henbit	30	Sta.	Mustard, wild	30	Sta.
Florida	Eveningprimrose 2/	40	Sta.	Geranium, Carolina	50	Sta.	Mustard, wild	5	Down	Pepperweed	40	Sta.	Radish, wild	5	Down
Georgia	Dock	20	Up	Garlic, wild	20	Sta.	Mustard	20	Up	Pepperweed	20	Up	Thistle, blessed	20	Up
Kentucky	Garlic, wild	80	Sta.	----------	--	--	----------	--	--	----------	--	--	----------	--	--
Louisiana	Darnel	25	Sta.	Dock, curly	40	Up	Henbit	10	Up	Mustard, wild	20	Sta.	Vetch	20	Sta.
Mississippi	Cheat	5	Sta.	Darnel	1	Sta.	Mustard	1	Sta.	Peas, wild winter	10	Sta.	Vetch	10	Sta.
North Carolina	Chickweed	80	Up	Garlic, wild	30	Sta.	Henbit	70	Up	Knawel	30	Up	Mustard	40	Sta.
Oklahoma	Bindweed	40	Up	Cheat	30	Up	Henbit	30	Up	Muatard, wild	20	Up	Pigweed	40	Sta.
South Carolina	Barley, little	25	Sta.	Chickweed, common	30	Sta.	Garlic, wild	20	Sta.	Mustard, wild	25	Sta.	Thistle, blessed	20	Sta.
Tennessee	Chickweed	30	Sta.	Dock, curly	20	Sta.	Garlic, wild	80	Up	Henbit	90	Sta.	Mustard, wild	20	Sta.
Virginia	Chickweed	25	Sta.	Garlic, wild	40	Sta.	Henbit	20	Sta.	Knawel	20	Sta.	Mayweed	5	Up
Western:															
Arizona	Johnsongrass	10	Sta.	Lambsquarters	25	Sta.	Oats, wild	40	Sta.	Rocket, London	50	Sta.	Sowthistle	10	Sta.
California	Bindweed, field	50	Sta.	Fiddleneck, Douglas-	40	Up	Oats, wild	35	Up	Rocket, London	30	Sta.	Tansymustard	20	Sta.
Colorado	Foxtail	60	Up	Kochia	70	Sta.	Oats, wild	70	Up	Pigweed, redroot	75	Up	Thistle, Canada	10	Up
Idaho	Bindweed, field	20	Sta.	Mustards	40	Sta.	Oats, wild	40	Up	Pennycress, field	25	Sta.	Thistle, Canada	50	Up
Montana	Bindweed, field	15	Sta.	Buckwheat, wild	60	Sta.	Cockle, cow	30	Sta.	Foxtail, green	10	Up	Oats, wild	50	Sta.
Nevada	Brome, downy	30	Sta.	Knapweed, Russian	15	Up	Whitetop	15	Up	----------	--	--	----------	--	--
New Mexico	Barnyardgrass	2	Sta.	Kochia	5	Up	Lambsquarters	2	Down	Oats, wild	2	Sta.	Sunflower	5	Down
Oregon	Bindweed	10	Sta.	Brome, downy	50	Sta.	Fiddleneck	50	Sta.	Ryegrass	30	Sta.	Thistle, Russian	40	Sta.
Utah	Bindweed, field	25	Up	Mustard, black	80	Sta.	Oats, wild	60	Up	Pigweed, redroot	90	Sta.	Sunflower	50	Sta.
Washington	Henbit	20	Sta.	Lettuce, prickly	20	Sta.	Pennycress, field	30	Sta.	Tansymustard	40	Sta.	Thistle, Russian	20	Up
Wyoming	Bindweed, field	30	Sta.	Mustard, wild	30	Up	Pigweed, redroot	75	Sta.	Tansymustard	60	Sta.	Thistle, Canada	30	Up
Alaska	Bluegrass, annual	15	Up	Chickweed	90	Sta.	Hempnettle	25	Up	Lambsquarters	90	Sta.	Spurry, corn	30	Up

1/ Sta., stationary.
2/ Eveningprimrose, cutleaf.

Table 36.--Rice: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Arkansas	---	500	---	---	16.00	---	1	99
Louisiana	---	490	---	---	8.00	---	25	75
Mississippi	---	50	---	---	6.50	---	25	75
Texas	---	500	---	---	12.00	---	20	80
Southern	---	1,540	---	---	11.85	---	16	84
California	15	350	15	16.00	9.00	20.00	3	97
Western	15	350	15	16.00	9.00	20.00	3	97
United States	15	1,890	15	16.00	11.32	20.00	13	87

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 37.--Rice: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Arkansas	---	Good	---	Sta.	Some	No	---
Louisiana	---	Good	---	Up	Some	No	---
Mississippi	---	Good	---	Sta.	Some	No	---
Texas	---	Fair	---	Up	Urgent	No	---
Southern	---	3-Good 1-Fair	---	2-Up 2-Sta	3-Some 1-Urgent	4-No	---
California	Good	Good	Good	Up	Some	No	---
Western	1-Good	1-Good	1-Good	1-Up	1-Some	1-No	---
United States	1-Good	4-Good 1-Fair	1-Good	3-Up 2-Sta.	1-Urgent 4-Some	5-No	---

1/ Sta., stationary.

Table 38.--Rice: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the three weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Alligatorweed	1	--	--	1	--	--	---	1	136	--	---	136
*Barnyardgrass	5	--	--	4	1	3	774 1/	--	---	2	748	1,522 1/
Baronetgrass	1	--	--	1	--	--	---	--	---	1	298	298
Bulrushes	2	--	--	--	2	1	86	1	65	--	---	151
Cattail, common	1	--	--	--	1	--	---	1	86	--	---	86
*Ducksalad	3	--	--	3	--	1	(1/)	2	730	--	---	730 1/
Jointvetch, northern	1	--	--	1	--	--	---	--	---	1	119	119
Rice, red	2	--	--	2	--	2	620	--	---	--	---	620
*Sesbania, hemp	3	--	--	3	--	2	515 1/	--	---	1	119	634 1/
Signalgrasses	2	--	--	2	--	2	172 1/	--	---	--	---	172 1/
Smartweeds	1	--	--	1	--	1	(1/)	--	---	--	---	(1/)
Spikerush	1	--	--	1	--	--	---	1	233	--	---	233
Sprangletops	2	--	--	1	1	--	---	2	137	--	---	137

1/ Figures do not include acreage estimates for weeds reported in Mississippi.

Table 39.--Rice: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Southern:															
Arkansas	Barnyardgrass	90	Sta.	Ducksalad	80	Up	Sesbania, hemp	90	Sta.	Signalgrass, broadleaf	30	Sta.	Sprangletop	5	Up
Louisiana	Alligatorweed	20	Up	Barnyardgrass	75	Down	Ducksalad	40	Up	Rice, red	65	Sta.	Spikerush	35	Up
Mississippi	Barnyardgrass	--	Sta.	Ducksalad	--	Sta.	Sesbania, hemp	--	Sta.	Signalgrass	--	--	Smartweed	--	Sta.
Texas	Barnyardgrass	40	Down	Baronetgrass	50	Down	Jointvetch, Northern	20	Down	Rice, red	30	Sta.	Sesbania, hemp	20	Down
Western:															
California	Barnyardgrass	60	Sta.	Bulrush, hardstem	20	Sta.	Bulrush, roughseed	15	Up	Cattail, common	20	Up	Sprangletop, bearded	25	Up

1/ Sta., stationary.

Table 40.--Tobacco: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	2/	0.2	---	450.00	20.00	---	2	98
Maryland	2	---	---	10.00	---	---	90	10
Pennsylvania	6	---	---	7.75	---	---	90	10
Northeastern	8.0	.2	---	8.31	20.00	---	88	12
Ohio	---	.5	---	---	9.00	---	95	5
Wisconsin	.5	---	---	---	30.00	---	60	40
North Central	.5	.5	---	30.00	9.00	---	78	22
Florida	.1	.3	0.4	5.00	8.00	13.00	60	40
Georgia	---	14	---	---	12.00	---	95	5
Kentucky	4	20	---	5.00	12.00	---	96	4
North Carolina	4	10	---	10.00	12.00	---	100	---
South Carolina	5	---	---	10.00	---	---	100	---
Tennessee	1	---	---	15.00	---	---	50	50
Virginia	---	3.5	---	---	12.00	---	80	20
Southern	14.1	47.8	.4	8.90	11.97	13.00	95	5
United States	22.6	48.5	.4	9.16	12.85	13.00	94	6

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.
2/ Less than 50 acres.

Table 41.--Tobacco: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Fair	Good	---	Up	Little	Yes	1
Maryland	Good	---	---	Up	Some	Yes	15
Pennsylvania	Good	---	---	Sta.	Some	No	---
Northeastern	2-Good 1-Fair	1-Good	---	2-Up 1-Sta.	2-Some 1-Little	2-Yes 1-No	4
Ohio	---	Fair	---	Up	Some	Yes	1
Wisconsin	Good	---	---	Up	Some	No	---
North Central	1-Good	1-Fair	---	2-Up	2-Some	1-Yes 1-No	1
Florida	Fair	Fair	Fair	Up	Some	No	---
Georgia	---	Fair	---	Up	Some	No	---
Kentucky	Fair	Fair	---	Up	Urgent	Yes	80
North Carolina	Fair	Fair	---	Up	Some	No	5
South Carolina	---	Good	---	Sta.	Some	No	---
Tennessee	Fair	---	---	Up	Some	No	---
Virginia	---	Fair	---	Up	Some	Yes	15
Southern	4-Fair	1-Good 5-Fair	1-Fair	6-Up 1-Sta.	1-Urgent 6-Some	2-Yes 5-No	33
United States	3-Good 5-Fair	2-Good 6-Fair	1-Fair	10-Up 2-Sta.	1-Urgent 10-Some 1-Little	5-Yes 7-No	29

1/ Sta., stationary.

Table 42.--Tobacco: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							100 acres		100 acres		100 acres	100 acres
*Bermudagrass	3	1	--	2	--	3	161	--	---	--	---	161
*Carpetweed	3	1	1	1	--	3	1,119	--	---	--	---	1,119
*Cocklebur	2	--	--	2	--	2	1,244	--	---	--	---	1,244
*Crabgrasses	10	2	1	7	--	8	6,428	1	66	1	528	7,022
Foxtails	2	1	1	--	--	2	109	--	---	--	---	109
Galinsoga	1	1	--	--	--	1	42	--	---	--	---	42
Goosegrass	1	--	--	1	--	--	---	--	---	1	352	352
*Lambsquarters	7	3	1	3	--	6	1,774	--	---	1	94	1,863
Morningglories	2	--	--	2	--	1	172	1	470	--	---	642
Nightshades	1	--	--	1	--	1	1,206	--	---	--	---	1,206
*Nutsedges	4	--	--	4	--	1	726	3	406	--	---	1,132
*Panicum, fall	2	--	1	1	--	1	24	1	1,034	--	---	1,058
*Pigweeds	3	3	1	4	--	7	2,480	--	---	1	84	2,564
Purslanes	2	1	1	--	--	2	90	--	---	--	---	90
*Pusley, Florida	3	--	--	3	--	3	843	--	---	--	---	843
*Ragweeds	4	2	1	1	--	1	28	2	1,263	1	74	1,370
Sicklepod	1	--	--	1	--	1	46	--	---	--	---	46
Velvetleaf	1	--	1	--	--	1	31	--	---	--	---	31

Table 43.--Tobacco: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut-----	Carpetweed----------	90	Sta.	Crabgrass----------	90	Up	Lambsquarters-------	90	Sta.	Pigweeds-----------	65	Sta.	Purslane-----------	50	Sta.
Maryland--------	Bermudagrass--------	10	Sta.	Crabgrass----------	70	Sta.	Lambsquarters-------	40	Sta.	Pigweed------------	60	Sta.	Ragweed------------	60	Up
Pennsylvania----	Foxtail------------	15	Sta.	Galinsoga----------	20	Sta.	Lambsquarters-------	45	Down	Pigweed------------	40	Down	Ragweed------------	35	Down
	Ca:	0													
North Central:															
Ohio----------	Carpetweed----------	20	Sta.	Crabgrass----------	60	Sta.	Panicum, fall-------	25	Sta.	Ragweed------------	30	Sta.	-------------------	--	--
Wisconsin-------	Foxtail, yellow-----	100	Sta.	Lambsquarters, common	100	Sta.	Pigweed, redroot----	100	Sta.	Purslane, common----	70	Sta.	Velvetleaf----------	40	Sta.
Southern:															
Florida---------	Bermudagrass--------	20	Sta.	Crabgrass----------	30	Sta.	Nutsedge-----------	30	Up	Pusley, Florida-----	50	Sta.	Sicklepod----------	30	Sta.
Georgia---------	Crabgrass----------	90	Sta.	Morningglory--------	30	Sta.	Nutsedge-----------	30	Up	Pigweed------------	30	Sta.	Pusley, Florida-----	90	Sta.
Kentucky--------	Carpetweed----------	60	Sta.	Crabgrass----------	70	Sta.	Nightshade---------	70	Sta.	Panicum, fall-------	60	Up	Pigweed------------	80	Sta.
North Carolina--	Cocklebur----------	30	Sta.	Crabgrass----------	90	Sta.	Lambsquarters-------	20	Sta.	Nutsedge-----------	20	Sta.	Ragweed------------	30	Up
South Carolina--	Cocklebur----------	25	Sta.	Crabgrass----------	95	Sta.	Nutsedge-----------	30	Up	Pigweed------------	25	Sta.	Pusley, Florida-----	40	Sta.
Tennessee-------	Crabgrass----------	90	Down	Goosegrass---------	60	Down	Lambsquarters-------	60	Sta.	Morningglory--------	80	Up	Pigweed------------	80	Sta.
Virginia--------	Bermudagrass--------	15	Sta.	Crabgrass----------	80	Sta.	Lambsquarters-------	65	Sta.	-------------------	--	--	-------------------	--	--

1/ Sta., stationary.

Table 44.--Peanuts: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Alabama	90	71	21	7.00	2.75	9.00	95	5
Florida	20	35	5	10.00	10.00	20.00	70	30
Georgia	387	7	100	12.00	2.00	8.00	75	25
North Carolina	80	15	50	12.00	4.50	16.00	90	10
Oklahoma	100	20	5	5.00	3.50	7.50	95	5
South Carolina	6	1	6	10.00	5.00	15.00	95	5
Texas	150	---	10	6.00	----	8.00	90	10
Virginia	10	20	60	12.00	14.50	20.00	90	10
Southern	843	169	257	9.72	5.87	12.83	84	16
New Mexico	1	---	---	9.50	----	----	100	---
Western	1	---	---	9.50	----	----	100	---
United States	844	169	257	9.72	5.87	12.83	84	16

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 45.--Peanuts: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Alabama	Good	Good	Good	Sta.	Some	No	---
Florida	Fair	Fair	Fair	Up	Some	No	---
Georgia	Good	Good	Good	Up	Some	No	---
North Carolina	Fair	Fair	Good	Up	Some	No	---
Oklahoma	Fair	Fair	Good	Sta.	Some	Yes	70
South Carolina	Good	Fair	Fair	Sta.	Some	No	---
Texas	Good	---	---	Up	Urgent	No	---
Virginia	Fair	Fair	Fair	Sta.	Urgent	Yes	5
Southern	4-Good 4-Fair	2-Good 5-Fair	4-Good 3-Fair	4-Up 4-Sta.	2-Urgent 6-Some	2-Yes 6-No	7
New Mexico	Good	---	---	Up	Urgent	No	---
Western	1-Good	---	---	1-Up	1-Urgent	1-No	---
United States	5-Good 4-Fair	2-Good 5-Fair	4-Good 3-Fair	5-Up 4-Sta.	3-Urgent 6-Some	2-Yes 7-No	7

1/ Sta., stationary.

Table 46.--Peanuts: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Barnyardgrass	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
*Beggarweeds	3	--	--	3	--	--	---	3	398	--	---	398
*Bermudagrass	2	--	--	2	--	1	5	1	59	--	---	64
*Cocklebur	4	--	--	4	--	1	67	3	238	--	---	305
Copperleaf, Virginia	1	--	--	1	--	--	---	1	18	--	---	18
*Crabgrasses	5	--	--	5	--	4	244	--	---	1	294	538
Foxtails	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
*Goosegrass	1	--	--	1	--	1	100	--	---	--	---	100
Johnsongrass	1	--	--	1	--	1	97	--	---	--	---	97
Kochia	1	--	--	--	1	--	---	1	1	--	---	1
Lambsquarters	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
Millet, Texas	1	--	--	1	--	--	---	1	45	--	---	45
*Morninglories	3	--	--	3	--	2	136	1	48	--	---	184
Nutsedges	6	--	--	6	--	1	348	5	142	--	---	490
*Panicum	3	--	--	3	--	--	---	2	263	1	118	381
*Pigweeds	3	--	--	2	1	3	256 1/	--	---	--	---	256 1/
*Pusley, Florida	2	--	--	2	--	2	56	--	---	--	---	56
Ragweeds	1	--	--	1	--	--	---	1	84	--	---	84
*Sicklepod	4	--	--	4	--	2	13	2	289	--	---	302
Signalgrass	1	--	--	1	--	--	---	--	---	1	[illegible]	59

1/ Does not include estimates of less than 500 acres for weeds reported in New Mexico.

Table 47.--Peanuts: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Southern:															
Alabama	Beggarweed	80	Up	Cocklebur	20	Up	Millet, Texas	25	Up	Nutsedge	25	Up	Sicklepod	50	Up
Florida	Beggarweed, Florida	10	Up	Crabgrass	100	Sta.	Nutsedge	10	Up	Pusley, Florida	100	Sta.	Sicklepod	20	Sta.
Georgia	Beggarweed, Florida	50	Up	Cocklebur	40	Up	Nutsedge	70	Sta.	Panicum, Texas	50	Up	Sicklepod	40	Up
North Carolina	Cocklebur	40	Sta.	Goosegrass	60	Sta.	Morningglory	45	Sta.	Nutsedge	25	Up	Ragweed	50	Up
Oklahoma	Copperleaf, Virginia	15	Up	Crabgrass	90	Sta.	Johnsongrass	80	Sta.	Morningglory	40	Up	Pigweed	90	Sta.
South Carolina	Cocklebur	25	Up	Crabgrass	60	Sta.	Nutsedge	30	Up	Pusley, Florida	40	Sta.	Sicklepod	20	Sta.
Texas	Bermudagrass	20	Up	Crabgrass	100	Down	Panicum, Texas	40	Down	Pigweed	50	Sta.	Signalgrass	20	Down
Virginia	Bermudagrass	5	Sta.	Crabgrass	75	Sta.	Morningglory	60	Sta.	Nutsedge	45	Up	Panicum, fall	15	Up
Western:															
New Mexico	Barnyardgrass	3	Sta.	Foxtail, green	3	Sta.	Kochia	8	Up	Lambsquarters	3	Sta.	Pigweed	5	Sta.

1/ Sta., stationary.

Table 48.--Sugarbeets: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
New York	---	5	---	----	10.00	----	60	40
Pennsylvania	3	1	---	6.50	2.00	----	80	20
Northeastern	3	6	---	6.50	8.67	----	68	32
Iowa	3	---	3	4.00	----	4.00	100	--
Michigan	75	1	---	8.50	3.00	----	80	20
Minnesota	70	10	30	5.00	3.00	8.00	90	10
Nebraska	21	---	21	15.00	----	15.00	22	78
North Dakota	50	10	---	4.50	3.00	----	95	5
Ohio	27	2	1	7.00	4.00	9.00	95	5
North Central	246	23	55	7.03	3.09	10.47	80	20
California	80	50	30	12.00	8.00	20.00	90	10
Colorado	90	20	---	12.00	6.00	----	90	10
Idaho	84	10	1	14.00	8.00	22.00	30	70
Montana	56	5	3	9.50	8.00	15.00	95	5
New Mexico	1	---	---	6.00	----	----	60	40
Oregon	10	2	---	8.00	5.00	----	90	10
Utah	18	3	---	7.65	7.65	----	75	25
Washington	2	1	---	16.00	15.00	----	90	10
Wyoming	45	5	1	6.00	11.00	17.00	70	30
Western	386	96	35	11.07	7.74	19.54	77	23
United States	635	125	90	9.48	6.93	14.00	78	22

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 49.--Sugarbeets: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
New York	Fair	Good	---	Sta.	Some	Yes	100
Pennsylvania	Good	Good	---	Sta.	Urgent	Yes	25
Northeastern	1-Good 1-Fair	2-Good	---	2-Sta.	1-Urgent 1-Some	2-Yes	67
Iowa	Good	---	Good	Sta.	Some	No	---
Michigan	Good	Good	---	Up	Some	No	---
Minnesota	Fair	Fair	Good	Up	Some	No	---
Nebraska	Fair	---	Fair	Up	Urgent	No	---
North Dakota	Good	Good	---	Up	Urgent	No	---
Ohio	Good	Fair	Good	Up	Some	No	---
North Central	4-Good 2-Fair	2-Good 2-Fair	3-Good 1-Fair	4-Up 2-Sta.	2-Urgent 4-Some	6-No	---
California	Fair	Fair	Good	Up	Urgent	Yes	10
Colorado	Good	Good	---	Sta.	Urgent	Yes	10
Idaho	Fair	Fair	Fair	Up	Some	No	---
Montana	Good	Fair	Fair	Up	Some	Yes	20
New Mexico	Fair	---	---	Up	Some	No	---
Oregon	Fair	Fair	---	Up	Urgent	Yes	---
Utah	Fair	Poor	---	Up	Urgent	No	---
Washington	Poor	Poor	---	Sta.	Urgent	Yes	30
Wyoming	Fair	Fair	Good	Up	Urgent	No	---
Western	2-Good 6-Fair 1-Poor	1-Good 5-Fair 2-Poor	2-Good 2-Fair	7-Up 2-Sta.	6-Urgent 3-Some	5-Yes 4-No	8
United States	7-Good 9-Fair 1-Poor	5-Good 7-Fair 2-Poor	5-Good 3-Fair	11-Up 6-Sta.	9-Urgent 8-Some	7-Yes 10-No	5

1/ Sta., stationary.

Table 50.--Sugarbeets: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Barley (crop)	1	--	--	--	1	1	7	--	---	--	---	7
*Barnyardgrass	11	3	3	--	5	8	238 1/	2	26	1	1	265 1/
*Bindweed, field	3	--	2	--	1	1	15	2	24	--	---	39
Buckwheat, wild	1	--	1	--	--	1	79	--	---	--	---	79
*Foxtails	13	2	6	--	5	9	497 1/2/	1	20	3	64	581 1/2/
Goosefoot, nettleleaf	1	--	--	--	1	1	127	--	---	--	---	127
Groundcherry	1	--	--	--	1	--	---	1	38	--	---	38
Johnsongrass	1	--	1	--	--	1	23	--	---	--	---	23
Knotweed, silversheath	1	--	--	--	1	1	64	--	---	--	---	64
*Kochia	7	--	2	--	5	2	58	5	308	--	---	366
*Lambsquarters	15	4	4	--	7	11	474 1/	1	18	3	39	531 1/
Mallow	1	--	--	--	1	--	---	1	3	--	---	3
Millet	1	1	--	--	--	--	---	1	11	--	---	11
*Mustards	6	3	2	--	1	5	164 1/	--	---	1	17	181 1/
*Nightshades	3	--	--	--	3	--	---	2	58	1	19	77
*Oat, wild	5	--	2	--	3	4	257	1	7	--	---	264
*Pigweeds	18	4	5	--	9	15	574 1/	1	152	2	19	745 1/
*Quackgrass	3	2	1	--	--	3	28 1/	--	---	--	---	28 1/
Ragweeds	2	1	1	--	--	1	(1/)	--	---	1	11	11 1/
Rockets, London	1	--	--	--	1	1	8	--	---	--	---	8
Smartweeds	1	--	1	--	--	1	29	--	---	--	---	29
Thistle, Russian	1	--	--	--	1	1	18	--	---	--	---	18
Thistles	1	--	--	--	1	1	9	--	---	--	---	9
Watergrasses, (complex)	1	--	--	--	1	1	8	--	---	--	---	8

1/ No acreages estimated for weeds reported in New Hampshire, and less than 500 acres estimated for lambsquarters and foxtails in New Mexico.
2/ Figures do not include duplicate estimates of 88,000 acres of green and yellow foxtails in North Dakota.

Table 51.--Sugarbeets: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Maine	Barnyardgrass	50	Up	Lambsquarters	50	Sta.	Millet	50	Up	Mustard	75	Down	Pigweed	50	Sta.
New Hampshire	Barnyardgrass	60	Sta.	Lambsquarters	90	Sta.	Mustard, wild	60	Sta.	Pigweed, redroot	60	Sta.	Quackgrass	40	Sta.
New York	Barnyardgrass	60	Sta.	Lambsquarters	90	Sta.	Mustard, wild	60	Sta.	Pigweed, redroot	60	Sta.	Quackgrass	40	Sta.
Pennsylvania	Foxtail, giant	15	Sta.	Foxtail, yellow	20	Sta.	Lambsquarters	35	Sta.	Pigweed, redroot	30	Sta.	Ragweed	20	Sta.
North Central:															
Iowa	Barnyardgrass	50	Sta.	Foxtails	50	Sta.	Lambsquarters, common	50	Sta.	Pigweed, redroot	50	Sta.	----------	--	--
Kansas	Barnyardgrass	100	Sta.	Bindweed, field	40	Sta.	Johnsongrass	60	Sta.	Kochia	100	Sta.	Pigweed	100	Sta.
Michigan	Bindweed, field	20	Up	Quackgrass	30	Sta.	----------	--	--	----------	--	--	----------	--	--
Minnesota	Foxtail	100	Sta.	Lambsquarters, common	65	Sta.	Mustard, wild	60	Sta.	Oats, wild	50	Sta.	Pigweed, redroot	75	Sta.
Nebraska	Barnyardgrass	30	Sta.	Foxtail	100	Sta.	Kochia	40	Up	Lambsquarters, common	40	Sta.	Pigweed	100	Sta.
North Dakota	Buckwheat, wild	90	Sta.	Foxtail, green	100	Sta.	Foxtail, yellow	100	Sta.	Mustard, wild	50	Sta.	Oats, wild	85	Sta.
Ohio	Foxtails	40	Down	Lambsquarters	40	Down	Pigweed	50	Down	Ragweed	30	Down	Smartweed	80	Sta.
Western:															
Arizona	Barley	40	Sta.	Mallow	20	Up	Pigweed	40	Sta.	Rocket, London	50	Sta.	Watergrass	50	Sta.
California	Barnyardgrass	45	Sta.	Goosefoot, nettleleaf	50	Sta.	Groundcherry, Wright	15	Up	Knotweed, silv. 2/	25	Sta.	Lambsquarters, common	60	Sta.
Colorado	Foxtail	90	Sta.	Kochia	95	Up	Nightshade	30	Up	Oats, wild	50	Sta.	Pigweed, redroot	90	Up
Idaho	Kochia	50	Up	Lambsquarters	60	Sta.	Pigweed, redroot	80	Sta.	Thistle, Canada	5	Sta.	Thistle, Russian	10	Sta.
Montana	Foxtail, green	30	Up	Kochia	30	Sta.	Nightshade	10	Up	Oats, wild	25	Sta.	Pigweed, rough	50	Sta.
New Mexico	Barnyardgrass	15	Down	Foxtail, green	10	Down	Kochia	15	Up	Lambsquarters	12	Down	Pigweed	20	Down
Oregon	Barnyardgrass	90	Sta.	Lambsquarters	90	Sta.	Mustard	90	Sta.	Oats, wild	30	Up	Pigweed	90	Sta.
Utah	Barnyardgrass	50	Up	Bindweed, field	20	Up	Foxtail, green	65	Sta.	Lambsquarters, common	60	Up	Pigweed, redroot	95	Sta.
Washington	Barnyardgrass	75	Sta.	Lambsquarters	75	Sta.	Pigweed, redroot	75	Sta.	----------	--	--	----------	--	--
Wyoming	Foxtail, green	80	Down	Kochia	40	Up	Lambsquarters	40	Down	Nightshade, black	30	Down	Pigweed, redroot	80	Sta.

1/ Sta., Stationary.
2/ Knotweed, silversheath.

Table 52.--Sugarcane: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Florida	5	185	4	35.00	10.00	45.00	98	2
Louisiana	54	27	189	7.50	6.50	14.00	90	10
Southern	59	212	193	9.83	9.55	14.64	93	7
Hawaii	59	59	---	27.00	27.00	----	75	25
Western	59	59	---	27.00	27.00	----	75	25
United States	118	271	193	18.42	13.35	14.64	90	10

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 53.--Sugarcane: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Florida	Good	Good	Good	Up	Urgent	No	---
Louisiana	Good	Fair	Fair	Up	Some	No	---
Southern	2-Good	1-Good 1-Fair	1-Good 1-Fair	2-Up	1-Urgent 1-Some	2-No	---
Hawaii	Fair	Fair	---	Sta.	Urgent	No	---
Western	1-Fair	1-Fair	---	1-Sta.	1-Urgent	1-No	---
United States	2-Good 1-Fair	1-Good 2-Fair	1-Good 1-Fair	2-Up 1-Sta.	2-Urgent 1-Some	3-No	---

1/ Sta., stationary.

Table 54.--Sugarcane: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Alexandergrass	2	--	--	1	1	--	---	2	53	--	---	53
Crabgrasses	1	--	--	1	--	1	94	--	---	--	---	94
Guineagrasses	1	--	--	--	1	--	---	1	24	--	---	24
Johnsongrass	1	--	--	1	--	--	---	--	---	1	198	198
Morningglory, threelobe	1	--	--	--	1	--	---	1	24	--	---	24
Napiergrass	1	--	--	1	--	--	---	1	38	--	---	38
Panicums	1	--	--	1	--	--	---	1	47	--	---	47
Paragrass	1	--	--	--	1	--	---	1	24	--	---	24
Passionflower, wingleaf	1	--	--	--	1	--	---	1	2	--	---	2

Table 55.--Sugarcane: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1958

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Investation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Southern:															
Florida	Alexandergrass	25	Up	Crabgrass	50	Sta.	Napiergrass	20	Up	Panicum Species	25	Up	----------	--	--
Louisiana	Johnsongrass	65	Down	----------	--	--	----------	--	--	----------	--	--	----------	--	--
Western:															
Hawaii	Alexandergrass	5	Up	Guineagrasses	20	Up	Morningglory 2/	20	Up	Paragrass	20	Up	Passionflower 3/	2	Up

1/ Sta., stationary.
2/ Morningglory, threelobe.
3/ Passionflower, wingleaf.

Table 56.--Legume seed crops: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Pennsylvania	---	3	---	----	5.25	----	95	5
Vermont	---	2	---	----	11.00	----	25	75
West Virginia	---	2/	---	----	3.00	----	100	--
Northeastern	---	5	---	----	7.38	----	68	32
Illinois	---	2	---	----	6.00	----	50	50
Minnesota	---	10	---	----	4.00	----	50	50
North Central	---	12	---	----	4.33	----	50	50
Oklahoma	5	---	---	4.00	----	----	100	--
South Carolina	1	---	1	7.00	----	7.00	90	10
Tennessee	---	1	---	----	2.00	----	50	50
Texas	---	3	---	----	2.50	----	50	50
Virginia	---	2/	---	----	2.25	----	100	--
Southern	6	4	1	4.50	2.37	7.00	80	20
California	30	88	2	10.00	9.00	15.00	75	25
Idaho	3	30	1	6.00	12.00	18.00	50	50
Montana	4	1	---	6.50	1.75	----	95	5
Nevada	2/	3	---	9.00	5.00	----	10	90
New Mexico	---	1	---	----	7.00	----	100	--
Oregon	30	---	---	4.00	----	----	60	40
Utah	4	---	---	30.00	----	----	20	80
Washington	---	20	---	----	4.00	----	90	10
Wyoming	---	1	---	----	6.00	----	100	--
Western	71	144	3	8.23	8.76	16.00	69	31
United States	77	165	4	7.94	8.24	13.75	69	31

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 57.--Legume seed crops: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Pennsylvania	---	Fair	---	Up	Urgent	No	---
Vermont	---	Good	---	Up	Some	No	---
West Virginia	---	Fair	---	Up	Little	No	---
Northeastern	---	1-Good 2-Fair	---	3-Up	1-Urgent 1-Some 1-Little	3-No	---
Illinois	---	Good	---	Sta.	Little	No	---
Minnesota	---	Fair	---	Up	Urgent	No	---
North Central	---	1-Good 1-Fair	---	1-Up 1-Sta.	1-Urgent 1-Little	2-No	---
Oklahoma	Fair	---	---	Up	Some	No	---
South Carolina	Fair	---	Fair	Sta.	Some	No	---
Tennessee	---	Fair	---	Sta.	Some	No	---
Texas	---	Fair	---	Up	Some	No	---
Virginia	---	Fair	---	Sta.	Some	No	---
Southern	2-Fair	3-Fair	1-Fair	2-Up 3-Sta.	5-Some	5-No	---
California	Fair	Fair	Good	Up	Urgent	Yes	10
Idaho	Fair	Fair	Fair	Up	Some	No	---
Montana	Fair	Fair	---	Up	Some	No	---
Nevada	Fair	Good	---	Sta.	Some	No	---
New Mexico	---	Good	---	Up	Some	No	---
Oregon	Fair	---	---	Up	Urgent	No	---
Utah	Fair	---	---	Sta.	Urgent	No	---
Washington	---	Good	---	Up	Some	Yes	20
Wyoming	---	Fair	---	Up	Urgent	No	---
Western	6-Fair	3-Good 4-Fair	1-Good 1-Fair	7-Up 2-Sta.	4-Urgent 5-Some	2-Yes 7-No	7
United States	8-Fair	5-Good 10-Fair	1-Good 2-Fair	13-Up 6-Sta.	6-Urgent 11-Some 2-Little	2-Yes 17-No	6

1/ Sta., stationary.

Table 58.--Legume seed crops: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Alfalfa	1	--	--	--	1	1	52	--	---	--	---	52
Alyssum, hoary	1	--	1	--	--	--	---	1	10	--	---	10
Annuals, winter	1	--	--	1	--	--	---	1	11	--	---	11
Barley, foxtail	1	--	--	--	1	1	2	--	---	--	---	2
Barnyardgrass	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
Bindweed	1	--	--	1	--	1	4	--	---	--	---	4
Bromes	4	--	1	--	3	2	66	2	12	--	---	78
Carrot, wild	4	3	--	--	1	4	19 2/	--	---	--	---	19 2/
Catchfly, nightflowering	3	2	1	--	--	1	10	2	4 2/	--	---	14 2/
Chickweeds	2	1	--	1	--	--	---	1	15	1	(2/)	15 2/
Chicory	1	1	--	--	--	--	---	1	(2/)	--	---	(2/)
Cinquefoil	1	1	--	--	--	1	(2/)	--	---	--	---	(2/)
Cockle, white	4	2	2	--	--	1	39	3	22 2/	--	---	61 2/
*Crabgrasses	6	--	2	4	--	5	163 2/	1	71	--	---	234 2/
Crotalaria	1	--	--	1	--	1	(2/)	--	---	--	---	(2/)
Dandelions	3	3	--	--	--	--	---	3	10 2/	--	---	10 2/
*Docks	7	--	1	4	2	6	73 3/	--	---	1	4	77 3/
*Dodders	12	--	--	4	8	3	13 1/2/	8	96	1	3	112 1/2/
Dogfennel	1	--	--	1	--	1	(2/)	--	---	--	---	(2/)
Flixweed	1	--	--	--	1	--	---	1	18	--	---	18
*Foxtails	6	--	4	1	1	3	143	2	96	1	6	245
Gumweed	1	--	--	1	--	1	5	--	---	--	---	5
Henbit	3	--	1	2	--	1	7	2	88	--	---	95
*Johnsongrass	5	--	--	4	1	3	8	1 2/	4	1	11	23
Kochia	3	--	1	--	2	--	---	3	21 1/	--	---	21 1/
Lambsquarters	2	--	1	--	1	2	10	--	---	--	---	10
Lettuce	2	--	--	--	2	1	26	1	30	--	---	56
Morningglories	1	--	--	1	--	--	---	1	5	--	---	5
Mustards	2	--	1	--	1	2	60	--	---	--	---	60
Oat, wild	1	--	--	--	1	1	7	--	---	--	---	7
Pennycress	2	--	2	--	--	--	---	2	54	--	---	54
*Pigweeds 4/	7	--	3	2	2	7	184 2/	--	---	--	---	184 2/
*Plantains	9	3	1	3	2	8	91 2/	1	5	--	---	96 2/
*Quackgrass	7	4	3	--	--	3	61	3	12 2/	1	(2/)	73 2/
*Ragweed	6	--	2	4	--	6	40	--	---	--	---	40
Rocket, yellow	4	3	1	--	--	2	4 2/	2	18	--	---	22 2/
Ryegrasses	2	--	--	--	2	2	54	--	---	--	---	54
Smartweed	3	--	2	1	--	2	11	1	23	--	---	34
Sneezeweed, bitter	2	--	--	2	--	2	5	--	---	--	---	5
Sowthistle, perennial	1	--	1	--	--	1	23	--	---	--	---	23
Sumpweed, rough	1	--	--	1	--	1	4	--	---	--	---	4
Tansymustard	2	--	--	--	2	--	---	1	35	1	1	36
*Thistles	8	2	3	--	3	5	57	3	1 2/	--	---	58
Whitetop	3	--	--	--	3	--	---	2	7	1	3	10

1/ Does not include estimates of less than 500 acres in New Mexico.
2/ Does not include estimates of less than 500 acres for all weeds reported in Connecticut, Vermont, West Virginia, Florida, and Nevada.
3/ Does not include estimates of less than 500 acres in Virginia.
4/ Includes amaranths.

Table 59.--Legume seed crops: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
New Hampshire	Carrot, wild	20	Sta.	Catchfly, nightfl.2/	40	Up	Cockle, white	40	Up	Quackgrass	100	Up	Rocket, yellow	40	Sta.
New York	Carrot, wild	20	Sta.	Catchfly, nightfl.2/	40	Up	Cockle, white	40	Up	Quackgrass	100	Up	Rocket, yellow	40	Sta.
Pennsylvania	Carrot, wild	15	Sta.	Dandelion	40	Up	Plantain, buckhorn	20	Up	Quackgrass	30	Sta.	Rocket, yellow	30	Up
Vermont	Chickweed	40	Down	Chicory	70	Up	Cinquefoil	60	Sta.	Dandelion	80	Up	Quackgrass	75	Down
West Virginia	Dandelion	60	Up	Plantain, blackseed-	50	Sta.	Plantain, buckhorn	50	Sta.	Thistle, Canada	30	Up	Thistle, musk	20	Up
North Central:															
Illinois	Dock	25	Sta.	Foxtail, giant	40	Sta.	Pigweed	20	Sta.	Plantain	25	Sta.	Thistle, Canada	15	Sta.
Iowa	Ragweed, common	30	Sta.	Smartweed, Pa.	30	Sta.	----	--	--	----	--	--	----	--	--
Minnesota3/	Catchfly, nightfl.2/	25	Sta.	Cockle, white	100	Sta.	Foxtails	100	Sta.	Quackgrass	85	Sta.	Sowthistle, perennial	60	Sta.
Missouri4/	Brome, Japanese	75	Sta.	Crabgrass, large	85	Up	Foxtails	75	Up	Henbit	60	Up	Mustard, wild	60	Sta.
Nebraska	Crabgrass	30	Sta.	Foxtail	100	Sta.	Pigweed	100	Sta.	Ragweed	30	Sta.	Smartweed	40	Up
North Dakota	Kochia	25	Up	Lambsquarters, common	15	Sta.	Pigweed, redroot	15	Sta.	Quackgrass	15	Up	Thistle, Canada	10	Sta.
Wisconsin	Alyssum, Hoary	50	Up	Cockle, white	90	Up	Pennycress, field	20	Up	Quackgrass	100	Sta.	Rocket, yellow	50	Up
Southern:															
Arkansas	Dodder	25	Down	Gumweed	40	Sta.	Ragweeds	30	Sta.	Sneezeweed, bitter	25	Sta.	Sumpweed, rough	30	Sta.
Florida	Amaranth species	5	Sta.	Crabgrass	5	Sta.	Crotalaria	5	Sta.	Dogfennel	5	Sta.	----	--	--
Kentucky	Annuals, winter	20	Up	Crabgrass	100	Sta.	Foxtail, giant	60	Up	Johnsongrass	20	Down	Plantain, buckhorn	40	Sta.
Oklahoma	Chickweed	20	Up	Crabgrass	95	Sta.	Dodder	15	Up	Henbit	50	Up	Ragweed	90	Sta.
South Carolina	Dock	40	Sta.	Dodder	20	Up	Johnsongrass	30	Sta.	Ragweed	60	Sta.	Sneezeweed, bitter	50	Sta.
Tennessee	Crabgrass	85	Sta.	Dock, curly	40	Sta.	Johnsongrass	15	Up	Morningglory	20	Up	Ragweed	20	Sta.
Texas	Bindweed, field	10	Sta.	Dock, curly	10	Down	Dodder	10	Up	Henbit	20	Sta.	Johnsongrass	15	Sta.
Virginia	Dock, curly	5	Sta.	Plantain, broadleaf	20	Sta.	Plantain, buckhorn	20	Sta.	Ragweed	15	Sta.	Smartweed	10	Sta.
Western:															
California	Alfalfa, volunteer	50	Sta.	Dock, curly	30	Sta.	Dodder species	35	Up	Plantain, buckhorn	30	Sta.	Ryegrass, Italian	35	Sta.
Idaho	Dodder	30	Up	Lettuce, prickly	60	Up	Pigweed, redroot	50	Sta.	Tansymustard	70	Up	Thistle, Canada	25	Sta.
Montana	Brome, downy	10	Sta.	Dodder	10	Up	Foxtail, green	20	Down	Mustards	30	Sta.	Whitetop	10	Down
Nevada	Dodder	2	Sta.	----	--	--	----	--	--	----	--	--	----	--	--
New Mexico	Barnyardgrass	15	Sta.	Dodder	5	Sta.	Johnsongrass	20	Sta.	Kochia	15	Up	Tansymustard	30	Down
Oregon	Carrot, wild	30	Sta.	Dodder	30	Sta.	Lettuce, China	60	Sta.	Ryegrass	40	Sta.	Thistle, Canada	10	Sta.
Utah	Brome, downy	30	Up	Dodder, field	75	Up	Flixweed	60	Up	Kochia	60	Up	Whitetop	20	Up
Washington	Dodder	15	Up	Lambsquarters	30	Sta.	Oats, wild	25	Sta.	Pigweed, redroot	30	Sta.	Plantain	20	Sta.
Wyoming	Barley, foxtail	25	Sta.	Bromegrass, downy	60	Up	Dock, curly	30	Sta.	Thistle, Canada	20	Up	Whitetop	20	Up

1/Sta., stationary.
2/Catchfly, nightflowering.
3/Minnesota also reported: Thistle, Canada 60 Sta.
4/Missouri also reported: Pennycress, field 60 Up.

Table 60.--Grass seed crops: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Pennsylvania	---	1	---	---	4.60	---	84	16
Northeastern	---	1	---	---	4.60	---	84	16
Kansas	---	2	---	---	2.00	---	50	50
Minnesota	---	25	---	---	2.50	---	50	50
North Central	---	27	---	---	2.46	---	50	50
Florida	---	1	---	---	4.00	---	100	---
South Carolina	---	1	1	---	1.00	1.00	65	35
Tennessee	---	2	---	---	2.00	---	50	50
Texas	3	3	2	5.00	2.50	9.50	50	50
Virginia	---	3	---	---	6.50	---	80	20
Southern	3	10	3	5.00	3.60	6.67	61	39
Idaho	---	8	---	---	5.00	---	100	---
Nevada	---	2/	---	---	2.00	---	100	---
Oregon	150	2/	2/	8.00	3.00	11.00	80	20
Utah	---	2/	---	---	2.00	---	20	80
Washington	---	10	---	---	3.00	---	90	10
Western	150	18	2/	8.00	3.89	11.00	82	18
United States	153	56	3	7.94	3.16	6.67	76	24

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 61.--Grass seed crops: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Pennsylvania	---	Fair	---	Up	Some	No	---
Northeastern	---	1-Fair	---	1-Up	1-Some	1-No	---
Kansas	---	Good	---	Up	Some	No	---
Minnesota	---	Fair	---	Up	Urgent	No	---
North Central	---	1-Good 1-Fair	---	2-Up	1-Urgent 1-Some	2-No	---
Florida	---	Fair	---	Sta.	Little	No	---
South Carolina	---	Good	Good	Sta.	Some	No	---
Tennessee	---	Good	---	Up	Some	No	---
Texas	Good	Fair	Good	Up	Some	Yes	50
Virginia	---	Poor	---	Up	Urgent	No	---
Southern	1-Good	2-Good 2-Fair 1-Poor	2-Good	3-Up 2-Sta.	1-Urgent 3-Some 1-Little	1-Yes 4-No	25
Idaho	---	Good	---	Up	Some	Yes	2
Nevada	---	Good	---	Up	Some	No	---
Oregon	Good	Good	Good	Sta.	Little	No	---
Utah	---	Good	---	Sta.	Some	No	---
Washington	---	Good	---	Sta.	Some	No	---
Western	1-Good	5-Good	1-Good	2-Up 3-Sta.	4-Some 1-Little	1-Yes 4-No	---
United States	2-Good	8-Good 4-Fair 1-Poor	3-Good	8-Up 5-Sta.	2-Urgent 9-Some 2-Little	2-Yes 11-No	2

1/ Sta., stationary.

Table 62.--Grass seed crops: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							100 acres		100 acres		100 acres	100 acres
Alyssum, hoary	1	--	1	--	--	--	---	1	28	--	---	28
Barley, little	2	--	--	2	--	--	---	1	40	1	200	240
Bentgrass, wind	1	--	--	--	1	--	---	1	7	--	---	7
Bermudagrass	1	--	--	1	--	1	5	--	---	--	---	5
Bindweed, field	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
*Bluegrass, annual	3	--	--	--	3	1	(1/)	1	12	1	1,060	1,072 1/
*Bromes	9 2/	--	3	--	6 2/	5	1,347 1/	3	(1/)	--	---	1,347 1/
Buckwheat, wild	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
Buttercup	1	--	--	1	--	--	---	1	50	--	---	50
Carpetgrass	1	--	--	1	--	1	(1/)	--	---	--	---	(1/)
Carrot, wild	1	1	--	--	--	1	25	--	---	--	---	25
Catchfly	1	--	1	--	--	1	130	--	---	--	---	130
Cheat	1	--	--	1	--	--	---	1	340	--	---	340
Chickweeds	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
Chicory	1	--	--	1	--	1	17	--	---	--	---	17
Cockle, white	2	--	2	--	--	1	530	1	50	--	---	580
Cocklebur	1	--	1	--	--	--	---	--	---	1	50	50
*Crabgrass	3	--	--	3	--	2	218	--	---	1	(1/)	218 1/
Dallisgrass	1	--	--	1	--	1	2	--	---	--	---	2
Docks	2	--	--	2	--	1	130	1	6	--	---	136
Dogfennel	1	--	--	1	--	1	40	--	---	--	---	40
Fescue, rattail	1	--	--	--	1	1	850	--	---	--	---	850
Fleabane, [illegible]	1	--	1	--	--	--	---	1	840	--	---	840
*[illegible]	6	--	4	--	2	4	1,450 1/	2	(1/)	--	---	1,450 1/
[illegible], [illegible]	3	--	--	3	--	2	93	1	340	--	---	433
Henbit	1	--	--	--	1	1	14	--	---	--	---	14
Horsenettle	1	--	--	1	--	1	40	--	---	--	---	40
Horseweed	1	--	1	--	--	1	960	--	---	--	---	960
Indigo, hairy	1	--	--	1	--	1	(1/)	--	---	--	---	(1/)
Johnsongrass	1	--	--	1	--	--	---	1	30	--	---	30
Kochia	3	--	2	--	1	1	(1/)	1	(1/)	1	(1/)	(1/)
*Lambsquarters	3	1	1	1	--	3	75	--	---	--	---	75
Morningglories	1	--	--	1	--	--	---	1	50	--	---	50
Mustards	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
Nightshade, silverleaf	1	--	--	1	--	1	(1/)	--	---	--	---	(1/)
Oat, wild	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
Panicums	1	--	1	--	--	1	(1/)	--	---	--	---	(1/)
Paspalums	1	--	--	1	--	1	(1/)	--	---	--	---	(1/)
Pennycress, field	1	--	1	--	--	--	---	1	11	--	---	11
Pepperweed	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
*Pigweeds	4	1	1	2	--	3	61 1/	--	---	1	(1/)	61 1/
*Plantains	3	1	--	2	--	3	236	--	---	--	---	236
*Quackgrass	7 2/	--	3	1	3 2/	3	585 1/	3	11 1/	--	---	596 1/
Ragweed	2	--	--	2	--	2	70 1/	--	---	--	---	70 1/
Rocket, yellow	2	1	1	--	--	1	30	1	28	--	---	58
Ryegrasses	2	--	--	1	1	2	1,283	--	---	--	---	1,283
Sandburs	3	--	1	2	--	--	---	2	7	1	(1/)	7 1/
Signalgrasses	1	--	--	1	--	--	---	1	1	--	---	1
Smartweeds	1	--	1	--	--	1	50	--	---	--	---	50
Sneezeweed, bitter	1	--	--	1	--	--	---	1	70	--	---	70

See footnotes at end of table.

Table 62.--Grass seed crops: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968--continued

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							100 acres		100 acres		100 acres	100 acres
Sorrel, red	1	--	--	--	1	1	320	--	---	--	---	320
Sunflower	2	--	1	1	--	--	---	--	---	2	50 1/	50 1/
Thistle, Russian	1	--	--	--	1	--	---	--	---	1	(1/)	(1/)
Thistles	4	--	2	--	2	1	(1/)	2	720 1/	1	(1/)	720 1/
Witchgrass	1	--	--	--	1	--	---	1	10	--	---	10

1/ No acreages estimated for weeds reported in Nebraska, North Dakota, Florida, Texas, Idaho, Montana, Utah, Wyoming, and Hawaii.
2/ Weeds reported by Idaho included in total and regional counts but not classified by infestation trend.

Table 63.--Grass seed crops: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1965

Region and State	Weed	Infestation Acres	Trend (1)	Weed	Infestation Acres	Trend (1)	Weed	Infestation Acres	Trend (1)	Weed	Infestation Acres	Trend (1)	Weed	Infestation Acres	Trend (1)
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Pennsylvania	Carrot, wild	25	Sta.	Dock, quarters	35	Sta.	Pigweed	35	Sta.	Plantain, buckhorn	25	Sta.	Rocket, yellow	30	Sta.
North Central:															
Iowa	Cocklebur	70	Down	Foxtails	70	Sta.	Smartweeds	70	Sta.	Sunflower	70	Down		--	--
Minnesota	Brome, downy	50	Sta.	Cockle, white	100	Sta.	Foxtails	60	Sta.	Quackgrass	100	Sta.	Night flowering 2/	25	Sta.
Missouri	Brome, Japanese	80	Sta.	Fleabane, rough	70	Up	Foxtails	90	Sta.	Horseweed	80	Sta.	Thistles	60	Up
Nebraska	Brome, downy	100	Sta.	Foxtails	30	Sta.	Kochia	40	Up	Panicum	30	Sta.	Sandbur	40	Up
North Dakota	Kochia	10	Sta.	Lambsquarters, common	5	Sta.	Pigweed, redroot	5	Sta.	Quackgrass	15	Up	Thistle, Canada	15	Up
Wisconsin	Alyssum, hoary	50	Up	Cockle, white	90	Up	Pennycress, field	20	Up	Quackgrass	100	Sta.	Rocket, yellow	50	Up
Southern:															
Florida	Carpetgrass	5	Sta.	Indigo, hairy	5	Sta.	Paspalum	10	Sta.	Ragweed	5	Sta.		--	--
Kentucky	Barley, little	30	Down	Cheat	50	Up	Dock	20	Sta.	Garlic, wild	50	Up	Plantain	30	Sta.
Mississippi	Dallisgrass	5	Sta.	Ryegrass	10	Sta.	Signalgrass	3	Up		--	--		--	--
Oklahoma	Bermudagrass	15	Sta.	Crabgrass	85	Sta.	Johnsongrass	90	Up	Pigweed	80	Sta.	Sandbur	20	Up
South Carolina	Barley, little	30	Up	Dogfennel	25	Sta.	Garlic, wild	40	Sta.	Horsenettle	30	Sta.	Sneezeweed, bitter	50	Up
Tennessee	Buttercup	20	Up	Crabgrass	90	Sta.	Lambsquarters	15	Sta.	Morningglory	20	Up	Ragweed	30	Sta.
Texas	Crabgrass	90	Down	Nightshade, silverleaf	25	Sta.	Pigweed	90	Down	Sandbur	50	Down	Sunflower	25	Down
Virginia	Broadleaf plantain	10	Sta.	Chicory	15	Sta.	Dock, curly	5	Up	Garlic, wild	30	Sta.	Quackgrass	10	Up
Western:															
Idaho	Brome, downy	--	--	Quackgrass	--	--		--	--		--	--		--	--
Montana	Brome, downy	20	Up	Buckwheat, wild	30	Sta.	Foxtail, green	10	Up	Mustards	50	Sta.	Oats, wild	30	Up
Oregon	Bluegrass, annual	50	Down	Brome, downy	5	Sta.	Fescue, rattail	40	Sta.	Ryegrass, Italian	60	Sta.	Sorrel, red	15	Sta.
Utah	Bindweed, field	10	Up	Brome, downy	25	Up	Pepperweed, yellow 3/	30	Sta.	Quackgrass	5	Up	Thistle, Canada	10	Sta.
Washington	Bentgrass, wind	15	Up	Bluegrass, annual	25	Up	Brome, downy	35	Sta.	Henbit	30	Sta.	Witchgrass	20	Up
Wyoming	Brome, downy	50	Up	Foxtail, green	50	Up	Kochia	60	Down	Thistle, Canada	30	Down	Thistle, Russian	60	Down
Alaska	Bluegrass, annual	20	Sta.	Chickweed	80	Sta.	Quackgrass	20	Sta.		--	--		--	--

1/ Sta., stationary.
2/ Butterfly, nightflowering.
3/ Pepperweed, yellow flower.

HORTICULTURAL CROPS

(See General Limitations)

Although horticultural crop acreages are small compared with many of the agronomic crops, the gross monetary return for these crops is large. These higher crop-unit values are able to support the cost of numerous weed control operations to facilitate production. Efficient herbicidal weed control methods, although costly, are often economically feasible because of the scarcity and high cost of hand labor. This explains the growers' acceptance of high treatment costs for some horticultural crops.

Two or three vegetable crops are often grown in succession on the same land each year. Therefore, growers carefully select and use herbicides and attemp to avoid the accumulation of chemical residues in soils. This practice, which may involve the application of three or more herbicides in succession, provides control over a much larger group of weed species than would be possible with a single herbicide or with a single treatment. As a result, the weeds prevalent in the several crops differ substantially within the same geographic region. Specialized cultural practices and the crop's growth habits are additional factors that influence the prevalence of weed species. These factors should be considered when interpreting the following detailed information.

Herbicides are vitally important in producing horticultural crops. Nevertheless, they do not supplant cultural practices, such as cultivation, crop rotation, fallowing, and similar methods, where these prove effective in controlling weeds.

HORTICULTURAL CROPS--VEGETABLES

(See General Limitations)

Every region of the United States has areas devoted to the commercial production of vegetable crops for the fresh market or for the processing industry. Therefore, numerous soils, climatic conditions, cultural practices, weed species, and crop varieties are involved in the discussion of weed control practices in these crops. Each of these factors has a major influence on the effectiveness of weed control methods. The tabular data presented in tables 64 through 111 are best understood if viewed in this light.[10] Approximately 66 percent of the sweet corn acreage and 36 percent of the acreage of other vegetables were treated with herbicides in 1968 (table 1).

Data on the extent, costs, and usage of herbicides in sweet corn and in other vegetables are summarized in tables 1 through 7. The 10 weeds reported most frequently in all vegetable crops (in order of decreasing frequency) were:

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[10]Preemergence and postemergence refer to emergence of weeds in perennial plantings of vegetable crops.

pigweeds and other amaranths, crabgrasses, lambsquarters, nutsedges, foxtails, ragweeds, barnyardgrass, purslane, quackgrass, and chickweed. The most frequently reported weeds in individual crops are designated in the summary weed table for each crop. Tables for the individual vegetable crops are grouped at the end of the discussions (see pages 85 through 130).

Sweet Corn

Over 700,000 acres of sweet corn were grown in 1968. On-the-farm value of this crop was more than $128 million. Approximately 461,000 acres, equivalent to 66 percent of the sweet corn acreage, were treated with herbicides. Of this acreage, 67 percent was treated before emergence; 24 percent was treated after emergence; and 9 percent was treated both before and after emergence. The total cost of herbicides and applications was $2.8 million (tables 64, 65, 66, and 67).

Potatoes

Approximately 1.4 million acres of potatoes were planted in 1968. On-the-farm value was $609 million. The acreage treated with herbicides constituted 31 percent of the total, or approximately 432,000 acres. The total cost of herbicides and applications was $3.7 million. Preemergence treatments were applied on 86 percent of the treated acreage; postemergence on 10 percent; and the combination of preemergence and postemergence treatments on 4 percent (tables 68, 69, 70, and 71).

Asparagus

The total area of asparagus harvested in 1968 was 125,000 acres. The on-the-farm value of the crop was $60.8 million. The percentage of the total acreage treated was 89 percent, or approximately 111,100 acres. The total cost of treatment was $1.2 million. The distribution among various methods of treatment was: preemergence, 55 percent; postemergence, 12 percent; and the preemergence plus postemergence combination, 33 percent (tables 72, 73, 74, and 75).

Vegetable Legumes

Approximately 2.6 million acres of vegetable legumes, including lima beans, snap beans, peas, and dry edible beans, were harvested during 1968. The on-the-farm value of these crops was approximately $353.7 million. Herbicides were applied on 903,000 acres, or on about 34 percent of the total acreage. Preemergence treatments were applied on 63 percent of this acreage; postemergence treatments on 27 percent; and combined treatments on 10 percent. The total cost of herbicides and applications was $7.0 million (tables 76, 77, 78, and 79).

Root And Bulb Crops

Approximately 334,515 acres of root and bulb crops, including carrots, onions, sweetpotatoes, and garlic, were harvested in 1968. The on-the-farm value was $264.5 million. Of the total area harvested, about 64 percent, or approximately 226,000 acres, was treated with herbicides. The total cost of

herbicides and applications amounted to $4.7 million. Preemergence treatments were applied on 32 percent of the total area treated; postemergence treatments on 32 percent; and the combination of both methods on 36 percent (tables 80, 81, 82, and 83).

Vine Crops

During 1968, a total of approximately 615,000 acres of vine crops, including cucumbers, cantaloupes, and watermelons, was harvested. The on-the-farm value of these crops was $227 million. Herbicides were applied on 108,000 acres, or on approximately 18 percent of the total acreage. Preemergence treatments were applied on 94 percent of this acreage; postemergence treatments on 3 percent; and combined treatments on 3 percent. The total cost of herbicides and applications was $1.2 million (tables 84, 85, 86, and 87).

Solanaceous Fruits

Approximately 568,000 acres of solanaceous vegetable fruit crops, including eggplants, peppers, and tomatoes, were harvested in 1968. The on-the-farm value of these crops was $568 million. Herbicides were applied on 263,500 acres, or on approximately 46 percent of the total acreage. Preemergence treatments were applied on 84 percent of this acreage; postemergence treatments on 6 percent; and combined treatments on 10 percent. The total cost of herbicides and applications was $3.7 million (tables 88, 89, 90, and 91).

Greens

Approximately 40,000 acres of vegetable greens, including kale and spinach, were harvested during 1968. The on-the-farm value of these crops was $15 million. Herbicides were applied on 15,000 acres, or on approximately 37 percent of the total acreage. Preemergence treatments were applied on 80 percent of this acreage; postemergence treatments on 13 percent; and combined treatments on 7 percent. The total cost of herbicides and applications was $112,800 (tables 92, 93, 94, and 95).

Salad Crops

Approximately 264,000 acres of salad crops, including celery, escarole, and lettuce, were harvested during 1968. The on-the-farm value of these crops was $279.7 million. Herbicides were applied on 138,300 acres, or on approximately 52 percent of the total acreage. Preemergence treatments were applied on 90 percent of this acreage; postemergence treatments on 2 percent; and combined treatments on 8 percent. The total cost of herbicides and applications was $1.8 million (tables 96, 97, 98, and 99).

Cole Crops

Approximately 185,000 acres of cole crops, including broccoli, brussels sprouts, cabbage, and cauliflower, were harvested during 1968. The on-the-farm value of these crops was $125 million. Herbicides were applied on 86,800 acres, or on approximately 47 percent of the total acreage. Preemergence treatments were applied on 87 percent of this acreage; postmergence treatments

on 9 percent; and combined treatments on 4 percent. The total cost of herbicides and applications was $851,300 (tables 100, 101, 102, and 103).

Miscellaneous Vegetable Crops

Agricultural Statistics (1969) reported that artichokes, spearmint, and peppermint were harvested on 105,600 acres in 1968. However, Agricultural Statistics does not cover a wide variety of other minor vegetable crops that are harvested from small acreages for local consumption in nearly all sections of the United States. Of all miscellaneous vegetable crop plantings, State specialists reported that approximately 24,000 acres were treated with herbicides during 1968. Preemergence treatments were applied on 81 percent of this acreage; postmergence treatments on 17 percent; and combined treatments on 2 percent. The total cost of herbicides and applications was $89,200 (tables 104, 105, 106, and 107).

All Vegetable Seed Crops

Approximately 173,000 acres of 42 different vegetable seed crops were grown during 1968. About 239 million pounds of seed were produced. Herbicides were applied on 5,000 acres, or on about 3 percent of the total acreage. Preemergence treatments were applied on 80 percent of this acreage, while postemergence treatments were made on the remaining 20 percent. The application of combined treatments was limited. The total cost of herbicides was approximately $70,000 (tables 108, 109, 110, and 111).

Table 64.--Sweet corn: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	3	0.5	0.1	9.00	7.00	15.00	65	35
Delaware	2	1	.1	4.00	3.00	6.00	80	20
Maine	1	1	.5	7.50	7.50	14.50	75	25
Maryland	24	---	---	6.00	---	---	75	25
Massachusetts	8	---	---	9.00	---	---	90	10
New Hampshire	.3	2/	2/	9.00	10.00	10.00	90	10
New Jersey	7	---	---	4.50	---	---	90	10
New York	25	5	---	12.00	7.50	---	75	25
Pennsylvania	8	1	---	6.50	6.50	---	50	50
Vermont	.1	.1	---	9.00	9.00	---	100	---
West Virginia	.5	.2	2/	10.00	8.00	12.00	100	---
Northeastern	78.9	8.8	.7	8.25	6.88	13.36	75	25
Illinois	36	18	6	8.00	1.00	10.00	60	40
Iowa	4	2	1	4.00	1.50	6.50	90	10
Kansas	.8	---	---	7.00	---	---	100	---
Michigan	10	4	12	7.50	3.00	6.00	75	25
Minnesota	75	2	---	4.00	3.00	---	80	20
Wisconsin	44	48	5	6.65	4.75	10.70	30	70
North Central	169.8	74.0	24.0	5.76	3.61	8.00	57	43
Alabama	1	.1	---	5.00	2.00	---	80	20
Florida	20	10	15	3.00	2.00	4.00	90	10
Kentucky	.1	---	---	5.00	---	---	100	---
North Carolina	1	1	1	8.00	2.00	10.00	75	25
Oklahoma	.8	.2	---	7.00	2.00	---	95	5
South Carolina	1	.5	2	10.00	3.00	13.00	90	10
Tennessee	.4	---	---	8.50	---	---	90	10
Virginia	2	.5	---	4.25	2.25	---	90	10
Southern	26.3	12.3	18.0	3.84	2.05	5.33	89	11
California	1	2	---	8.00	5.00	---	80	20
Idaho	2	5	---	6.00	2.00	---	25	75
Oregon	30	5	---	10.00	10.00	---	70	30
Utah	---	1	---	---	2.50	---	80	20
Washington	1	1	---	5.00	4.00	---	90	10
Hawaii	.3	---	2/	30.00	---	35.00	100	---
Western	34.3	14.0	2/	9.74	5.46	35.00	65	35
United States	309.3	109.1	42.7	6.67	3.94	6.96	65	35

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 65.--Sweet corn: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Good	Fair	Fair	Up	Some	Yes	10
Delaware	Fair	Fair	Good	Sta.	Some	No	---
Maine	Good	Good	Good	Up	Little	Yes	50
Maryland	Good	---	---	Up	Little	Yes	10
Massachusetts	Good	Fair	Fair	Up	Some	Yes	10
New Hampshire	Good	Fair	Good	Up	Some	No	---
New Jersey	Good	---	---	Up	Some	No	---
New York	Good	Good	---	Sta.	Little	Yes	10
Pennsylvania	Good	Good	---	Up	Some	No	---
Vermont	Good	Good	---	Up	Some	No	---
West Virginia	Good	Fair	Good	Up	Some	No	---
Northeastern	10-Good 1-Fair	4-Good 5-Fair	4-Good 2-Fair	9-Up 2-Sta.	8-Some 3-Little	5-Yes 6-No	9
Illinois	Good	Good	Good	Sta.	Some	Yes	30
Iowa	Good	Good	Good	Sta.	Some	No	---
Kansas	Fair	---	---	Up	Some	Yes	70
Michigan	Good	Good	Good	Up	Some	Yes	10
Minnesota	Good	Good	---	Up	Urgent	No	---
Wisconsin	Good	Fair	Good	Up	Some	Yes	75
North Central	5-Good 1-Fair	4-Good 1-Fair	4-Good	4-Up 2-Sta.	1-Urgent 5-Some	4-Yes 2-No	35
Alabama	Good	Good	---	Up	Some	No	---
Florida	Good	Good	Good	Sta.	Little	No	---
Kentucky	Good	---	---	Up	Some	Yes	30
North Carolina	Good	Good	Good	Up	Some	Yes	10
Oklahoma	Good	Fair	---	Sta.	Some	Yes	75
South Carolina	Good	Good	Good	Sta.	Some	No	---
Tennessee	Good	---	---	Sta.	Some	No	---
Virginia	Good	Good	---	Up	Some	Yes	20
Southern	8-Good	5-Good 1-Fair	3-Good	4-Up 4-Sta.	7-Some 1-Little	4-Yes 4-No	3
California	Good	Poor	---	Up	Urgent	No	---
Idaho	---	Good	Fair	Up	Some	Yes	15
Oregon	Good	Fair	---	Sta.	Some	Yes	20
Utah	Good	Fair	---	Up	Urgent	Yes	50
Washington	Good	Good	---	Sta.	Some	Yes	30
Hawaii	Good	---	Good	Sta.	Some	No	---
Western	5-Good	2-Good 2-Fair 1-Poor	1-Good 1-Fair	3-Up 3-Sta.	2-Urgent 4-Some	4-Yes 2-No	19
United States	28-Good 2-Fair	15-Good 9-Fair 1-Poor	12-Good 3-Fair	20-Up 11-Sta.	3-Urgent 24-Some 4-Little	17-Yes 14-No	24

1/ Sta., stationary.

Table 66.--Sweet corn: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary No.	Stationary Area	Up No.	Up Area	Down No.	Down Area	
							100 acres		100 acres		100 acres	100 acres
*Barnyardgrass	10	5	--	--	5	6	612	3	186	--	---	804 1/
Bermudagrass	3	--	--	2	1	1	(2/)	1	7	--	---	56 1/
Bindweeds	4	2	1	--	1	2	5	2	30	--	---	35
Bromes	1	--	1	--	--	1	18	--	---	--	---	18
Cockleburs	4	--	1	3	--	4	88 2/	--	---	--	---	88
*Crabgrasses	18	8	1	9	--	10	278 2/	4	33	1	10	628 1/
Crowfootgrass	1	--	--	1	--	--	---	--	---	--	---	295 1/
Fleabane, rough	1	--	1	--	--	--	---	1	16	--	---	16
*Foxtails	15	4	6	1	4	8	528 2/	4	1,281 3/	3	356 4/	2,165 3/4/
Goosegrass	2	--	--	2	--	1	4	1	2	--	---	6
Horsenettle	1	1	--	--	--	1	12	--	---	--	---	12
Horseweed	1	--	1	--	--	1	18	--	---	--	---	18
Jimsonweed	1	--	1	--	--	--	---	1	27	--	---	27
*Johnsongrass	5	--	--	5	--	2	21	3	12	--	---	33
Junglerice	1	--	--	1	--	--	---	1	3	--	---	3
Kochia	1	--	--	--	1	1	6	--	---	--	---	6
Ladysthumb	1	1	--	--	--	--	---	1	(2/)	--	---	(2/)
*Lambsquarters	10	4	1	1	4	8	1,141	--	---	1	(2/)	1,142 1/
Mercury, three-seeded	1	--	1	--	--	--	---	--	---	--	---	(1/2/)
Morningglories	2	--	--	2	--	2	9	--	---	--	---	9
Nightshades	1	--	1	--	--	--	---	--	---	--	---	(1/2/)
*Nutsedges	15	7	1	6	1	5	25 2/	7	40 2/	1	2	166 1/
*Panicum, fall	8	6	1	1	--	2	15	5	109 2/	--	---	130 1/
Peavine	1	--	1	--	--	--	---	1	41	--	---	41
*Pigweeds 5/	19	5	2	6	6	15	2,627 2/	--	---	2	98	2,899 1/
Purslane	1	--	--	--	1	1	48	--	---	--	---	48
Pusley, Florida	2	--	--	1	1	1	2/	1	16	--	---	16
*Quackgrass	13	7	2	--	4	4	54	3	58	5	1,276	1,390 1/
Ragweeds	3	2	--	1	--	2	135 2/	--	---	1	61	196
Ryegrass	1	--	--	--	1	1	216	--	---	--	---	216
Sandburs	2	--	--	--	2	--	---	2	25	--	---	25
Sicklepod	1	--	--	1	--	1	(2/)	--	--	--	---	(2/)
*Smartweeds	4	--	2	1	1	4	229	--	---	--	---	229
Sunflower	1	--	1	--	--	--	---	1	79	--	---	79
Thistles	2	--	1	--	1	--	---	1	14	1	2	16
Velvetleaf	3	1	2	--	--	2	149	1	573	--	---	722
Witchgrass	1	1	--	--	--	--	---	1	(2/)	--	---	(2/)

1/ Reports and acreage estimates for weeds reported in Rhode Island, Kansas, and Florida are included in regional and total figures but not in figures for infestation trends.

2/ Figures do not include estimates of less than 500 acres for certain weeds reported in Vermont, West Virginia, Georgia, Kentucky, Tennessee, and Hawaii.

3/ Includes estimates of 127,400 acres of green foxtail but not 38,200 acres of giant foxtail reported in Wisconsin.

4/ Includes estimates of 27,100 acres of giant foxtail but not 20,300 acres of yellow foxtail reported in Illinois.

5/ Includes all amaranths.

Table 67.--Sweet corn: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Barnyardgrass	10	Sta.	Crabgrass	30	Up	Nutsedge	10	Sta.	Panicum, fall	10	Sta.	Quackgrass	10	Down
Delaware	Bindweed, field	10	Sta.	Crabgrass	25	Sta.	Foxtail, green	25	Sta.	Nutsedge	25	Sta.	Panicum, fall	25	Sta.
Maine	Barnyardgrass	10	Sta.	Crabgrass	40	Up	Lambsquarters	30	Sta.	Pigweed	50	Sta.	Quackgrass	40	Sta.
Maryland	Crabgrass	40	Sta.	Foxtail	60	Sta.	Lambsquarters	30	Sta.	Pigweed	50	Sta.	Velvetleaf	25	Sta.
New Hampshire	Barnyardgrass	15	Sta.	Bindweed	5	Sta.	Crabgrass	50	Up	Nutsedge	10	Down	Quackgrass	20	Sta.
New Jersey	Crabgrass	25	Sta.	Foxtails	25	Sta.	Horsenettle	10	Sta.	Nutsedge	15	Up	Panicum, fall	30	Up
New York	Barnyardgrass	20	Up	Lambsquarters	90	Sta.	Pigweed, redroot	90	Sta.	Quackgrass	30	Down	Ragweed	40	Sta.
Pennsylvania	Foxtail, yellow	35	Down	Panicum, fall	10	Up	Pigweed, redroot	40	Down	Ragweed	25	Down	--	--	--
Rhode Island	Barnyardgrass	60	Down	Crabgrass	95	Down	Nutsedge	10	Down	Panicum, fall	60	Down	Quackgrass	25	Down
Vermont	Crabgrass	20	Up	Lambsquarters	20	Down	Nutsedge	20	Up	Pigweed, redroot	20	Down	Quackgrass	45	Down
West Virginia	Ladysthumb	15	Up	Nutsedge	30	Sta.	Panicum, fall	30	Up	Quackgrass	50	Up	Witchgrass	20	Up
North Central:															
Illinois	Foxtail, giant	40	Down	Foxtail, yellow	30	Down	--	--	--	--	--	--	--	--	--
Iowa	Cocklebur, common	100	Sta.	Foxtails	100	Sta.	Smartweed, Pa.	100	Sta.	Sunflower	100	Up	Velvetleaf	100	Sta.
Kansas	Crabgrass	15	Down	Lambsquarters	10	Down	Mercury, three-seeded	5	Down	Nightshade	5	Down	Pigweed	15	Down
Michigan	Nutsedge	5	Up	Quackgrass	20	Down	--	--	--	--	--	--	--	--	--
Missouri	Brome, Japanese	80	Sta.	Fleabane, rough	70	Up	Foxtails	90	Sta.	Horseweed	80	Sta.	Thistles	50	Up
Ohio	Bindweed	20	Up	Jimsonweed	20	Up	Panicum, fall	30	Up	Peavine	30	Up	Smartweed	20	Sta.
Wisconsin	Foxtail, giant	30	Up	Pigweed, redroot	100	Sta.	Quackgrass	90	Down	Velvetleaf	45	Up	--	--	--
Southern:															
Alabama	Crabgrass	100	Sta.	Johnsongrass	30	Up	Nutsedge	20	Sta.	Pusley, Florida	50	Up	Smartweed	30	Sta.
Florida	Amaranth, spiny	35	Down	Bermudagrass	10	Down	Crabgrass, large	60	Down	Crowfootgrass	60	Down	Nutsedge, purple	20	Down
Georgia	Cocklebur	5	Sta.	Crabgrass	90	Sta.	Morningglory	30	Sta.	Pigweed	30	Sta.	Sicklepod	5	Sta.
Kentucky	Crabgrass	100	Sta.	Foxtail, giant	100	Sta.	Pigweed	30	Sta.	Ragweed	60	Sta.	--	--	--
North Carolina	Crabgrass	90	Sta.	Goosegrass	10	Sta.	Lambsquarters	25	Sta.	Nutsedge	15	Up	Pigweed	10	Sta.
Oklahoma	Bermudagrass	30	Up	Crabgrass	90	Sta.	Johnsongrass	80	Sta.	Junglerice	15	Up	Pigweed	40	Sta.
South Carolina	Cocklebur	50	Sta.	Crabgrass	60	Sta.	Johnsongrass	20	Sta.	Nutsedge	30	Sta.	Pigweed	50	Sta.
Tennessee	Cocklebur	25	Sta.	Crabgrass	80	Down	Johnsongrass	5	Up	Morningglory	40	Sta.	Nutsedge	10	Up
Virginia	Crabgrass	30	Sta.	Goosegrass	5	Up	Johnsongrass	5	Up	Nutsedge	15	Up	Panicum, fall	15	Up
Western:															
California	Barnyardgrass	70	Up	Lambsquarters	40	Sta.	Pigweed, redroot	50	Sta.	Purslane	30	Sta.	--	--	--
Idaho	Barnyardgrass	20	Sta.	Foxtail, green	90	Sta.	Lambsquarters	50	Sta.	Pigweed	90	Sta.	Sandbur	10	Up
Montana	Foxtail, green	50	Up	Kochia	50	Sta.	Pigweed, rough	50	Sta.	Quackgrass	10	Sta.	Thistle, Canada	15	Down
Oregon	Barnyardgrass	50	Sta.	Lambsquarters	50	Sta.	Pigweed	50	Sta.	Quackgrass	10	Sta.	Ryegrass	50	Sta.
Utah	Barnyardgrass	50	Up	Bindweed, field	25	Up	Foxtail, green	15	Sta.	Pigweed, redroot	95	Sta.	Quackgrass	20	Up
Washington	Barnyardgrass	60	Sta.	Lambsquarters	60	Sta.	Pigweed, redroot	60	Sta.	Quackgrass	10	Up	Smartweed	20	Sta.
Hawaii	Bermudagrass	15	Sta.	Foxtail, bristly	30	Up	Nutsedge, purple	30	Up	Pusley, Florida	15	Sta.	Sandbur, southern	30	Up

1/ Sta., stationary.

Table 68.--Potatoes: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	2.4	2.4	0.6	18.00	18.00	21.00	100	--
Delaware	4	3	.1	3.00	25.00	28.00	90	10
Maine	130	10	5	4.00	4.00	8.00	98	2
Maryland	1.5	---	---	10.00	----	----	100	--
Massachusetts	2.3	2.3	.5	18.00	18.00	21.00	90	10
New Hampshire	2	.5	---	10.00	10.00	----	100	--
New Jersey	8	---	---	15.00	----	----	90	10
Pennsylvania	29	---	2.5	12.50	----	15.00	85	15
Rhode Island	3	1	1	10.00	10.00	20.00	100	--
Vermont	.5	1	---	10.00	15.00	----	100	--
West Virginia	.3	.1	---	20.00	30.00	----	90	10
Northeastern	183.0	20.3	9.7	6.42	11.46	12.72	95	5
Illinois	1	---	---	10.00	----	----	80	20
Iowa	.5	---	.5	4.00	----	4.00	100	--
Kansas	.8	---	---	13.00	----	----	100	--
Michigan	40	---	---	8.00	----	----	60	40
Ohio	5	1	---	12.00	6.00	----	75	25
South Dakota	1	---	---	13.00	----	----	70	30
Wisconsin	30	5	2	10.00	6.00	9.00	100	--
North Central	78.3	6.0	2.5	9.14	6.00	8.00	79	21
Alabama	1	---	---	5.00	----	----	90	10
Florida	5	3	4	4.00	4.00	7.00	95	5
Kentucky	.1	---	---	7.00	----	----	100	--
Louisiana	.8	---	---	10.00	----	----	98	2
Mississippi	.8	---	---	7.00	----	----	100	--
North Carolina	8	---	---	7.00	----	----	75	25
Oklahoma	.3	---	---	7.50	----	----	100	--
South Carolina	.5	---	---	8.00	----	----	100	--
Tennessee	.2	---	---	20.00	----	----	90	10
Virginia	5	10	.5	12.50	12.50	19.00	90	10
Southern	21.7	13.0	4.5	7.74	10.54	8.33	90	10
Arizona	2	---	---	8.00	----	----	50	50
California	50	---	---	15.00	----	----	70	30
Colorado	2	---	---	10.00	----	----	90	10
Idaho	15	1	---	7.00	3.50	----	40	60
Montana	4	1	---	12.00	4.00	----	100	--
Oregon	5	1	---	15.00	6.00	----	90	10
Utah	1	---	---	6.00	----	----	10	90
Washington	10	---	---	5.00	----	----	90	10
Alaska	.5	---	---	6.00	----	----	90	10
Hawaii	.2	---	---	40.00	----	----	100	--
Western	89.7	3.0	---	12.05	4.50	----	69	31
United States	372.7	42.3	16.7	8.42	9.91	10.83	86	14

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 69.--Potatoes: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Good	Good	Good	Sta.	Some	No	---
Delaware	Good	Good	Good	Sta.	Some	No	---
Maine	Good	Good	Good	Up	Some	No	---
Maryland	Good	---	---	Up	Some	No	---
Massachusetts	Good	Good	Good	Sta.	Some	No	---
New Hampshire	Good	Fair	---	Sta.	Some	No	---
New Jersey	Fair	---	---	Sta.	Some	No	---
Pennsylvania	Good	---	Good	Up	Some	No	---
Rhode Island	Good	Good	Good	Up	Some	No	---
Vermont	Good	Fair	---	Sta.	Some	No	---
West Virginia	Fair	Fair	---	Up	Some	No	---
Northeastern	9-Good 2-Fair	5-Good 3-Fair	6-Good	5-Up 6-Sta.	11-Some	11-No	---
Illinois	Fair	Fair	Good	Up	Some	No	---
Iowa	Good	---	Good	Sta.	Some	No	---
Kansas	Fair	---	---	Up	Some	Yes	40
Michigan	Good	---	---	Up	Some	No	---
Ohio	Good	Fair	---	Up	Some	No	---
South Dakota	Good	---	---	Sta.	Some	No	---
Wisconsin	Good	Good	Good	Up	Some	Yes	5
North Central	5-Good 2-Fair	1-Good 2-Fair	3-Good	5-Up 2-Sta.	7-Some	2-Yes 5-No	3
Alabama	Fair	---	---	Up	Some	No	---
Florida	Fair	Fair	Good	Up	Some	No	---
Kentucky	Good	---	---	Up	Some	No	---
Louisiana	Good	---	---	Up	Little	No	---
Mississippi	Fair	---	---	Up	Some	No	---
North Carolina	Fair	---	---	Up	Urgent	No	---
Oklahoma	Fair	---	---	Up	Some	No	---
South Carolina	Good	---	---	Up	Some	No	---
Tennessee	Fair	---	---	Sta.	Some	No	---
Virginia	Fair	Fair	Fair	Up	Some	Yes	1
Southern	3-Good 7-Fair	2-Fair	1-Good 1-Fair	9-Up 1-Sta.	1-Urgent 8-Some 1-Little	1-Yes 9-No	---
Arizona	Good	---	---	Up	Some	No	---
California	Fair	---	---	Sta.	Some	No	---
Colorado	Good	---	---	Up	Some	No	---
Idaho	Fair	Poor	---	Up	Urgent	No	---
Montana	Fair	Fair	---	Sta.	Little	No	---
Oregon	Good	Fair	---	Up	Urgent	No	---
Utah	Fair	---	---	Up	Urgent	No	---
Washington	Fair	---	---	Up	Some	Yes	10
Alaska	Good	---	---	Sta.	Some	No	---
Hawaii	Poor	---	---	Sta.	Urgent	No	---
Western	4-Good 5-Fair 1-Poor	2-Fair 1-Poor	---	6-Up 4-Sta.	4-Urgent 5-Some 1-Little	1-Yes 9-No	1
United States	21-Good 16-Fair 1-Poor	6-Good 9-Fair 1-Poor	10-Good 1-Fair	25-Up 12-Sta.	5-Urgent 31-Some 2-Little	4-Yes 34-No	1

1/ Sta., stationary.

Table 70.--Potatoes: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							100 acres		100 acres		100 acres	100 acres
Apple-of-Peru	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
Barley, wild	1	--	--	1	--	--	---	1	6	--	---	6
*Barnyardgrass	12	4	2	1	5	6	1,109	6	1,210	--	---	2,319
Bermudagrass	3	--	--	2	1	1	(1/)	1	2	--	---	65 2/
Bindweeds	1	--	--	--	1	--	---	1	7	--	---	7
Bluegrass, annual	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
Chickweeds	3	1	--	1	1	2	19	--	---	1	2	21
Cockleburs	1	--	--	1	--	--	---	1	10	--	---	10
*Crabgrasses	19	5	4	10	--	10	579	2	68	4	36 1/	943 2/
Crowfootgrass	1	--	--	1	--	--	---	--	---	--	---	251 2/
Docks	1	--	--	1	--	--	---	1	43	--	---	43
Dodder	1	1	--	--	--	1	8	--	---	--	---	8
Fingergrass, feather	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
*Foxtails	14	3	7	1	3	7	1,770	5	413 1/	1	61	2,264 2/
Galinsoga	1	1	--	--	--	--	---	1	1	--	---	1
Goosefoots	1	--	--	--	1	1	50	--	---	--	---	50
Goosegrass	1	1	--	--	--	--	---	1	8	--	---	8
Henbit	1	--	--	1	--	1	20	--	---	--	---	20
Jimsonweed	1	1	--	--	--	1	32	--	---	--	---	32
Johnsongrass	1	--	--	1	--	1	4	--	---	--	---	4
Knotweeds	1	--	--	--	1	1	20	--	---	--	---	20
*Kochia	5	--	2	--	3	4	1,203	1	27	--	---	1,230
Ladysthumb	3	2	1	--	--	3	295	--	---	--	---	295
*Lambsquarters	22	8	6	2	6	18	6,181	1	6	2	32 1/	6,219 2/
Mallows	1	--	--	--	1	1	20	--	---	--	---	20
Mercury, three-seeded	1	--	1	--	--	--	---	--	---	--	---	1 2/
Millet	1	1	--	--	--	--	---	1	775	--	---	775
Morningglories	3	--	--	3	--	2	13	1	2	--	---	15
Mustards	2	1	1	--	--	1	40	--	---	1	1,162	1,202
*Nightshades	7	--	2	1	4	2	486	4	277	--	---	763 2/
*Nutsedges	15	5	2	6	2	2	401	11	256 1/	--	---	744 2/
Oat, wild	3	--	1	--	2	3	1,140	--	---	--	---	1,140
Panicum	5	3	1	1	--	1	16	3	92	--	---	135 2/
*Pigweeds 3/	26	6	6	7	7	19	6,700	4	123	--	---	7,003 2/
Purslane	2	1	--	--	1	2	300	--	---	--	---	300
Pusley, Florida	1	--	--	1	--	1	82	--	---	--	---	82
*Quackgrass	9	3	2	1	3	5	236	4	46 1/	--	---	282
Radish, wild	1	1	--	--	--	1	34	--	---	--	---	34
*Ragweeds	5	1	2	2	--	4	491	--	---	1 1/	---	491
Rockets	2	1	--	--	1	2	75	--	---	--	---	75
Shepherdspurse	1	--	--	--	1	--	--	1	368	--	---	368
Signalgrass	1	--	--	1	--	--	--	1	13	--	---	13
Smartweeds	3	--	1	1	1	1	5	2	65	--	---	70
Sowthistle	1	--	--	--	1	1	40	--	---	--	---	40
Spurry, corn	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
Thistle, Russian	1	--	1	--	--	1	40	--	---	--	---	40
Thistles	4	--	--	--	4	1	8	3	635	--	---	643

1/ No acreages estimated for weeds reported in Illinois, Alaska, and Hawaii.
2/ Reports and acreage estimates for weeds reported in Indiana, Kansas, and Florida are included in regional and total figures but not in figures for infestation trends.
3/ Includes all amaranths.

Table 71.-- Potatoes: Five most important weeds listed alphabetically by states within regions, acreage infested, and infestation trend, 1963

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Barnyardgrass	30	Up	Crabgrass	60	Up	Lambsquarters	10	Up	Nutsedge	10	Up	Pigweed	10	Up
Delaware	Dodder	10	Sta.	Jimsonweed	40	Sta.	Lambsquarters	25	Sta.	Purslane	30	Sta.	Ragweed	40	Sta.
Maine	Barnyardgrass	50	Up	Lambsquarters	80	Sta.	Millet	50	Up	Mustard	75	Down	Pigweed	75	Sta.
Maryland	Crabgrass	90	Sta.	Foxtail	30	Up	Lambsquarters	90	Sta.	Nutsedge	50	Up	Pigweed	60	Up
New Hampshire	Chickweed, field	25	Down	Crabgrass	80	Down	Galinsoga	10	Up	Lambsquarters	60	Sta.	Rocket, yellow	40	Sta.
New Jersey	Barnyardgrass	15	Sta.	Lambsquarters	40	Sta.	Nutsedge	25	Up	Panicum, fall	25	Up	Pigweed	35	Sta.
Pennsylvania	Foxtail, yellow	20	Sta.	Lambsquarters	30	Sta.	Nutsedge	35	Up	Pigweed	30	Sta.	Quackgrass	40	Sta.
Rhode Island	Crabgrass	60	Up	Foxtails	40	Up	Ladysthumb	35	Sta.	Panicum, fall	50	Up	Radish, wild	60	Sta.
Vermont	Barnyardgrass	20	Sta.	Crabgrass	20	Sta.	Lambsquarters	15	Sta.	Pigweed, redroot	15	Sta.	Quackgrass	10	Sta.
West Virginia	Goosegrass	15	Up	Ladysthumb	10	Sta.	Nutsedge	20	Up	Panicum, fall	30	Sta.	Quackgrass	25	Up
North Central:															
Illinois	Crabgrass	--	Down	Lambsquarters	--	Down	Ragweed	--	Down		--	--		--	--
Indiana	Crabgrass	40	Down	Foxtails	30	Down	Nutsedge	5	Down	Panicums	40	Down	Pigweed	80	Down
Iowa	Barnyardgrass	15	Sta.	Foxtails	15	Sta.	Lambsquarters	15	Sta.	Pigweed, redroot	15	Sta.	Smartweed, Pa.	15	Sta.
Kansas	Crabgrass	25	Down	Lambsquarters	5	Down	Mercury, three-seeded	10	Down	Nightshade	2	Down	Pigweed	5	Down
Nebraska	Foxtail	100	Sta.	Kochia	40	Sta.	Lambsquarters, common	40	Sta.	Nightshade, black	15	Up	Pigweed	100	Sta.
North Dakota	Foxtail	90	Sta.	Lambsquarters, common	60	Sta.	Oats, wild	50	Sta.	Pigweed, redroot	60	Sta.	Quackgrass	5	Sta.
Ohio	Barnyardgrass	40	Up	Crabgrass	30	Sta.	Foxtail	40	Down	Nutsedge	15	Up	Quackgrass	20	Up
South Dakota	Foxtails	100	Sta.	Kochia	75	Sta.	Mustard	75	Sta.	Thistle, Russian	75	Sta.		--	--
Wisconsin	Foxtail, green	100	Sta.	Ladysthumb	50	Sta.	Lambsquarters, common	100	Sta.	Pigweed, redroot	100	Sta.	Ragweed, common	50	Sta.
Southern:															
Alabama	Crabgrass	100	Sta.	Nutsedge	20	Sta.	Pigweed	50	Up	Pusley, Florida	50	Sta.	Smartweed	30	Up
Florida	Amaranth, spiny	30	Down	Bermudagrass	15	Down	Crabgrass, large	55	Down	Crowfootgrass	60	Down	Nutsedge, purple	20	Down
Kentucky	Crabgrass	100	Sta.	Foxtail, giant	100	Sta.	Nightshade	20	Sta.		--	--		--	--
Louisiana	Chickweeds	85	Sta.	Crabgrass	80	Sta.	Henbit	90	Sta.	Pigweed	80	Sta.	Signalgrass	60	Up
Mississippi	Cocklebur	40	Up	Crabgrass	90	Sta.	Morningglory	10	Up	Nutsedge	15	Up		--	--
North Carolina	Crabgrass	100	Sta.	Dock, curly	30	Up	Lambsquarters	50	Sta.	Panicum, fall	20	Up	Pigweed	50	Sta.
Oklahoma	Bermudagrass	50	Up	Crabgrass	90	Sta.	Johnsongrass	85	Sta.	Lambsquarters	70	Sta.	Pigweed	90	Sta.
South Carolina	Crabgrass	40	Down	Morningglory	30	Sta.	Nutsedge	30	Up	Pigweed	40	Sta.	Ragweed	30	Sta.
Tennessee	Barley, wild	15	Up	Crabgrass	70	Down	Morningglory	30	Sta.	Nutsedge	5	Up	Quackgrass	5	Up
Virginia	Barnyardgrass	10	Up	Crabgrass	40	Sta.	Nutsedge	10	Up	Pigweed	60	Sta.	Ragweed	60	Sta.
Western:															
Arizona	Goosefoots	50	Sta.	Knotweed	20	Sta.	Mallow	20	Sta.	Rocket, London	70	Sta.	Sowthistle	40	Sta.
California	Barnyardgrass	60	Sta.	Nightshade	20	Up	Nutsedge	40	Sta.	Purslane	30	Sta.	Shepherdspurse	40	Up
Colorado	Barnyardgrass	60	Up	Foxtail	75	Up	Kochia	50	Sta.	Lambsquarters	50	Sta.	Pigweed, redroot	50	Sta.
Idaho	Kochia	30	Sta.	Lambsquarters	90	Sta.	Oats, wild	20	Sta.	Pigweed, redroot	100	Sta.	Thistle, Canada	20	Up
Montana	Lambsquarters	40	Down	Oats, wild	15	Sta.	Pigweed, redroot	50	Sta.	Quackgrass	10	Sta.	Thistle, Canada	10	Sta.
Oregon	Barnyardgrass	10	Sta.	Lambsquarters	10	Sta.	Pigweed	8	Sta.	Quackgrass	5	Sta.		--	--
Utah	Barnyardgrass	50	Up	Bindweed, field	10	Up	Kochia	40	Up	Nightshade	90	Up	Pigweed, redroot	95	Sta.
Washington	Barnyardgrass	75	Sta.	Lambsquarters	75	Sta.	Nightshade, black	75	Sta.	Pigweed, redroot	75	Sta.	Thistle, Canada	5	Up
Wyoming	Foxtail, green	50	Up	Nightshade, black	50	Up	Pigweed, redroot	50	Up	Smartweed	40	Up	Thistle, Canada	40	Up
Alaska	Bluegrass, annual	20	Up	Chickweed	90	Sta.	Lambsquarters	90	Sta.	Quackgrass	25	Up	Spurry, corn	20	Sta.
Hawaii	Apple-of-Peru	75	Sta.	Bermudagrass	15	Sta.	Fingergrass, feather	15	Sta.	Foxtail, bristly	30	Up	Nutsedge, purple	30	Up

1/ Sta., stationary.

Table 72.--Asparagus: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	2/	---	---	12.00	----	----	100	--
Delaware	3	2.5	---	12.00	15.00	----	95	5
Maryland	4.2	---	---	6.50	----	----	95	5
Massachusetts	1	---	---	12.00	----	----	75	25
New Hampshire	2/	---	---	10.00	----	----	100	--
New Jersey	---	8	---	----	12.00	----	90	10
Pennsylvania	---	.2	---	----	8.00	----	75	25
West Virginia	2/	2/	---	30.00	35.00	----	100	--
Northeastern	8.2	10.7	---	9.18	12.63	----	92	8
Illinois	9	---	---	11.00	----	----	50	50
Kansas	.3	---	---	8.00	----	----	100	--
Michigan	10	2	2	10.00	10.00	20.00	75	25
Ohio	.2	---	---	8.00	----	----	100	--
North Central	19.5	2.0	2.0	10.41	10.00	20.00	66	34
Arkansas	.2	---	---	8.00	----	----	100	--
Oklahoma	.4	---	---	4.50	----	----	100	--
Virginia	.1	---	2/	8.50	----	16.00	100	--
Southern	7	---	2/	6.07	----	16.00	100	--
California	30	---	35	9.00	----	13.50	90	10
Oregon	1	1	---	12.00	3.00	----	80	20
Utah	2/	---	---	12.00	----	----	80	20
Washington	1	---	---	5.00	----	----	90	10
Western	32.0	1.0	35.0	8.97	3.00	13.50	90	10
United States	60.4	13.7	37.0	9.43	11.54	13.85	85	15

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 73.--Asparagus: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Good	---	---	Sta.	Some	No	---
Delaware	Fair	Fair	---	Sta.	Little	No	---
Maryland	Good	---	---	Sta.	Little	No	---
Massachusetts	Fair	---	---	Sta.	Some	No	---
New Hampshire	Good	---	---	Sta.	Some	No	---
New Jersey	---	Good	---	Up	Some	No	---
Pennsylvania	---	Good	---	Down	Some	No	---
West Virginia	Fair	Fair	---	Up	Some	No	---
Northeastern	3-Good 3-Fair	2-Good 2-Fair	---	2-Up 5-Sta. 1-Down	6-Some 2-Little	8-No	---
Illinois	Fair	---	---	Up	Urgent	No	---
Kansas	Good	---	---	Sta.	Little	No	---
Michigan	Good	Good	Good	Up	Some	No	---
Ohio	Good	---	---	Sta.	Some	No	---
North Central	3-Good 1-Fair	1-Good	1-Good	2-Up 2-Sta.	1-Urgent 2-Some 1-Little	4-No	---
Arkansas	Good	---	---	Sta.	Little	No	---
Oklahoma	Fair	---	---	Up	Some	No	---
Virginia	Fair	---	Fair	Sta.	Little	No	---
Southern	1-Good 2-Fair	---	1-Fair	1-Up 2-Sta.	1-Some 2-Little	3-No	---
California	Fair	---	Fair	Up	Urgent	No	---
Oregon	Good	Fair	---	Sta.	Some	No	---
Utah	Fair	---	---	Sta.	Some	No	---
Washington	Good	---	---	Sta.	Some	No	---
Western	2-Good 2-Fair	1-Fair	1-Fair	1-Up 3-Sta.	1-Urgent 3-Some	4-No	---
United States	9-Good 8-Fair	3-Good 3-Fair	1-Good 2-Fair	6-Up 12-Sta. 1-Down	2-Urgent 12-Some 5-Little	19-No	---

1/ Sta., stationary.

Table 74.--Asparagus: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary No.	Stationary Area	Up No.	Up Area	Down No.	Down Area	
							100 acres		100 acres		100 acres	100 acres
*Barnyardgrass	4	--	--	1	3	3	43 1/	1	6	--	---	49 1/
*Bermudagrass	3	--	--	2	1	1	140	2	(1/)	--	---	140 1/
*Bindweeds	9	3	2	--	4	3	191 1/	6	45 1/	--	---	236 1/
Brome, downy	1	--	--	--	1	1	26	--	---	--	---	26
Chickweeds	2	1	--	--	1	2	124	--	---	--	---	124
*Crabgrasses	6 2/	2	1	3	--	5	32 1/	--	---	--	---	32 1/
Crowfootgrass	1	--	--	1	--	1	(1/)	--	---	--	---	(1/)
Dogbane	1	1	--	--	--	1	4	--	---	--	---	4
*Foxtails	3	--	2	--	1	1	34	--	---	2	(1/)	34 1/
Grasses, annual	1	1	--	--	--	--	---	1	(1/)	--	---	(1/)
Henbit	1	1	--	--	--	1	7	--	---	--	---	7
Horsenettle	2	1	1	--	--	1	4	1	7	--	---	11
Johnsongrass	1	--	--	1	--	1	(1/)	--	---	--	---	(1/)
*Lambsquarters	4	2	--	2	--	3	19 1/	--	---	1	2	21 1/
Marestail	1	1	--	--	--	1	36	--	---	--	---	36
*Milkweeds	6 2/	2	4	--	--	3	40 1/	2	14	--	---	54
Moringglories	1	--	1	--	--	1	(1/)	--	---	--	---	(1/)
Mustards	2	--	--	--	2	2	26 1/	--	---	--	---	26 1/
Nightshades	1 2/	--	1	--	--	--	---	--	---	--	---	(1/)
*Nutsedges	3	1	1	1	--	--	---	3	7 1/	--	---	7 1/
Orchardgrass	1	1	--	--	--	1	(1/)	--	---	--	---	(1/)
Panicum, fall	1	1	--	--	--	1	(1/)	--	---	--	---	(1/)
*Pigweeds 3/	6 2/	1	1	3	1	3	2 1/	1	1/	1	1	3 1/
Purslane	1	--	--	1	--	1	(1/)	--	---	--	---	(1/)
*Quackgrass	5	2	2	--	1	1	26	3	1/	1	1	27 1/
Ragweeds	2	2	--	--	--	--	---	1	14	1	1	15
Sandburs	1 2/	--	1	--	--	--	---	--	---	--	---	(1/)
Thistles	2	1	1	--	--	--	---	2	26	--	---	26

1/ No acreages estimated for weeds reported in Connecticut, West Virginia, Illinois, Kansas, Florida, Oklahoma, and Utah.

2/ Weeds reported in Kansas not classified by infestation trend; counts included in regional and total reports only; acreages estimated as negligible.

3/ Includes all amaranths.

Table 75.--Asparagus: Five most important weeds listed [illegible] in regions, [illegible] infested, and infestation trend, 1960

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Grasses, annual	25	Up	----------	--	--	----------	--	--	----------	--	--	----------	--	--
Delaware	Bindweed	10	Sta.	Crabgrass	30	Sta.	Dogbane	10	Sta.	Horsenettle	10	Sta.	Milkweed	10	Sta.
Maryland	Chickweed	20	Sta.	Crabgrass	50	Sta.	Henbit	20	Sta.	Lambsquarters	50	Sta.	Ragweed	40	Up
New Jersey	Bindweed	10	Up	Marestail	15	Sta.	Milkweed	15	Sta.	Thistle, Canada	10	Up	----------	--	--
Pennsylvania	Lambsquarters	25	Down	Pigweed, redroot	20	Down	Quackgrass	18	Down	Ragweed	20	Down	----------	--	--
West Virginia	Bindweed, field	15	Sta.	Nutsedge	40	Up	Orchardgrass	25	Sta.	Panicum, fall	30	Sta.	Quackgrass	40	Up
North Central:															
Illinois	Foxtail, giant	--	Down	Foxtail, yellow	--	Down	Milkweed	--	Sta.	Morningglory	--	Sta.	----------	--	--
Kansas	Crabgrass	20	Down	Milkweed, climbing	3	Down	Nightshade	5	Down	Pigweed	5	Down	Sandbur	15	Down
Michigan	Bindweed, field	5	Up	Horsenettle	5	Up	Milkweed, common	10	Up	Nutsedge	5	Up	Quackgrass	20	Sta.
Ohio	Bindweed	30	Up	Milkweed	20	Up	Quackgrass	10	Up	Thistle, Canada	25	Up	----------	--	--
Southern:															
Florida	Amaranth, spiny	60	Up	Bermudagrass	20	Up	Crabgrass, large	70	Sta.	Crowfootgrass	70	Sta.	Nutsedge, purple	20	Up
Oklahoma	Crabgrass	95	Sta.	Johnsongrass	80	Sta.	Lambsquarters	60	Sta.	Pigweed	90	Sta.	Purslane	45	Sta.
Virginia	Barnyardgrass	10	Sta.	Bermudagrass	5	Up	Crabgrass	25	Sta.	Lambsquarters	35	Sta.	Pigweed	35	Sta.
Western:															
California	Bermudagrass	30	Sta.	Bindweed	40	Sta.	Chickweed, common	25	Sta.	----------	--	--	----------	--	--
Oregon	Barnyardgrass	50	Up	Bindweed, field	20	Up	----------	--	--	----------	--	--	----------	--	--
Utah	Barnyardgrass	50	Sta.	Bindweed, field	10	Up	Mustard, black	50	Sta.	Pigweed, redroot	90	Sta.	Quackgrass	10	Up
Washington	Barnyardgrass	25	Sta.	Bindweed, field	5	Up	Brome, downy	15	Sta.	Foxtail, green	20	Sta.	Mustard, tumble	15	Sta.

1/ Sta., stationary.

Table 76.--Vegetable legumes: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	0.3	---	---	9.00	----	----	100	---
Delaware	12	2	---	8.00	18.00	----	80	20
Maine	7	2	---	10.00	3.00	----	90	10
Maryland	17.5	2.6	---	8.00	4.00	----	50	50
Massachusetts	1.3	---	---	9.00	----	----	100	---
New Hampshire	.2	---	---	10.00	----	----	90	10
New Jersey	2	---	---	6.00	----	----	90	10
New York	115	5	---	12.00	5.00	----	95	5
Pennsylvania	8	---	---	6.50	----	----	75	25
West Virginia	.2	2/	---	20.00	25.00	----	100	---
Northeast	163.5	11.6	---	10.83	6.67	----	87	13
Illinois	30	---	---	8.00	----	----	80	20
Kansas	13	---	---	10.00	----	----	80	20
Michigan	15	3	---	12.00	8.50	----	75	25
Minnesota	8	20	---	9.00	3.00	----	80	20
Missouri	1	2/	0.1	8.00	5.00	7.00	75	25
Ohio	1	---	---	6.00	----	----	75	25
Wisconsin	40	50	---	10.00	6.60	----	25	75
North Central	108.0	73.0	.1	9.59	5.69	7.00	52	48
Alabama	2	---	---	8.00	----	----	80	20
Arkansas	.7	---	---	6.00	----	----	100	---
Florida	30	5	6	3.00	2.00	4.00	95	5
Georgia	1	---	---	10.00	----	----	100	---
Kentucky	.5	---	---	9.00	----	----	100	---
Louisiana	.3	---	---	10.00	----	----	98	2
Mississippi	4	.2	---	5.00	8.00	----	100	---
North Carolina	7	---	---	8.00	----	----	90	10
Oklahoma	3	---	---	6.00	----	----	100	---
South Carolina	5	---	---	12.00	----	----	90	10
Tennessee	1	---	---	12.00	----	----	90	10
Texas	1	---	---	6.00	----	----	100	---
Virginia	2	---	---	8.50	----	----	100	---
Southern	57.5	5.2	6.0	5.51	2.23	4.00	95	5
California	35	5	---	10.00	5.00	----	90	10
Idaho	83	18	34	6.50	5.00	6.00	70	30
Montana	.5	1	---	4.00	3.00	----	60	40
Oregon	40	10	---	15.00	3.00	----	70	30
Utah	1	1	---	12.00	5.00	----	10	90
Washington	50	120	50	5.00	4.00	9.00	40	60
Wyoming	30	---	---	9.00	----	----	70	30
Hawaii	2/	---	---	30.00	----	----	100	---
Western	239.5	155.0	84	8.45	4.08	7.79	58	42
United States	568.5	244.8	90.1	9.05	4.64	7.54	65	35

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 77.--Vegetable legumes: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Fair	---	---	Up	Some	No	---
Delaware	Fair	Fair	---	Sta.	Some	No	---
Maine	Good	Fair	---	Up	Some	No	---
Maryland	Good	Good	---	Up	Some	No	---
Massachusetts	Fair	---	---	Sta.	Little	No	---
New Hampshire	Good	---	---	Sta.	Some	No	---
New Jersey	Good	---	---	Sta.	Some	No	---
New York	Good	Good	---	Sta.	Little	No	---
Pennsylvania	Good	---	---	Up	Some	No	---
West Virginia	Good	Fair	---	Up	Some	No	---
Northeastern	7-Good 3-Fair	2-Good 3-Fair	---	5-Up 5-Sta.	8-Some 2-Little	10-No	---
Illinois	Fair	---	---	Up	Urgent	Yes	40
Kansas	Good	---	---	Up	Urgent	No	---
Michigan	Good	Good	---	Up	Some	No	---
Minnesota	Good	Good	---	Sta.	Some	No	---
Missouri	Good	Good	Fair	Up	Some	No	---
Ohio	Fair	---	---	Sta.	Some	No	---
Wisconsin	Fair	Fair	---	Up	Some	No	---
North Central	4-Good 3-Fair	3-Good 1-Fair	1-Fair	5-Up 2-Sta.	2-Urgent 5-Some	1-Yes 6-No	7
Alabama	Fair	---	---	Up	Some	No	---
Arkansas	Good	---	---	Sta.	Little	Yes	5
Florida	Good	Fair	Good	Up	Little	No	---
Georgia	Fair	---	---	Up	Some	No	---
Kentucky	Good	---	---	Up	Some	No	---
Louisiana	Good	---	---	Up	Little	No	---
Mississippi	Fair	Poor	---	Up	Some	No	---
North Carolina	Fair	---	---	Up	Some	No	---
Oklahoma	Good	---	---	Up	Some	No	---
South Carolina	Good	---	---	Up	Some	No	---
Tennessee	Fair	---	---	Up	Some	No	---
Texas	Good	---	---	Up	Some	No	---
Virginia	Fair	---	---	Up	Some	No	---
Southern	7-Good 6-Fair	1-Fair 1-Poor	1-Good	12-Up 1-Sta.	10-Some 3-Little	1-Yes 12-No	---
California	Good	Fair	---	Up	Some	Yes	10
Idaho	Fair	Fair	Fair	Up	Some	Yes	1
Montana	Good	Fair	---	Sta.	Some	No	---
Oregon	Good	Fair	---	Up	Some	No	---
Utah	Good	---	---	Up	Some	No	---
Washington	Good	Good	Good	Up	Some	No	---
Wyoming	Good	---	Good	Up	Some	No	---
Hawaii	Poor	---	---	Sta.	Some	No	---
Western	6-Good 1-Fair 1-Poor	4-Fair 1-Good	2-Good 1-Fair	6-Up 2-Sta.	8-Some	2-Yes 6-No	1
United States	24-Good 13-Fair 1-Poor	6-Good 9-Fair 1-Poor	3-Good 2-Fair	28-Up 10-Sta.	2-Urgent 31-Some 5-Little	4-Yes 34-No	2

1/ Sta., stationary.

Table 78.--Vegetable legumes: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							100 acres		100 acres		100 acres	100 acres
*Barnyardgrass	5	1	--	--	4	3	2,053	1	(1/)	1	8	2,061 1/
Bermudagrass	2	--	--	2	--	--	---	2	41	--	---	41
Bindweed, field	2	--	--	--	2	1	257	1	29	--	---	286
Carpetweed	1	--	--	1	--	1	8	--	---	--	---	8
Cockleburs	5	--	1	4	--	2	32	3	114	--	---	146
*Crabgrasses	18	2	4	12	--	11	1,135	1	29	5	453	2,035 2/
Cranesbill	1	1	--	--	--	--	---	1	20	--	---	20
Crowfootgrass	1	--	--	1	--	1	117	--	---	--	---	117
Dandelions	1	1	--	--	--	--	---	--	---	1	9	9
Fiddleneck, coast	1	--	--	--	1	1	1,540	--	---	--	---	1,540
*Foxtails	8	1	4	1	2	3	2,587	2	64	3	316	2,967
Goosegrass	1	--	--	1	--	--	---	--	---	1	92	92
Grasses, annual	1	1	--	--	--	--	---	1	3	--	---	3
Groundcherry	2	--	1	--	1	--	---	2	673	--	---	673
Groundsels	1	--	--	--	1	--	---	1	87	--	---	87
Jimsonweed	2	1	1	--	--	2	135	--	---	--	---	135
Johnsongrass	3	--	--	2	1	1	19	--	---	1	6	339 2/
*Kochia	5	--	2	--	3	3	582	1	2	--	---	618 2/
*Lambsquarters	16	5	2	3	6	10	5,055	2	154 1/	4	5,242	10,451 1/
Morningglories	5	1	--	4	--	3	34	1	84	1	2	120
Mustards	2	1	--	1	--	--	---	2	52	--	---	52
*Nightshades	6	--	2	--	4	1	1,540	5	2,223	--	---	3,763
*Nutsedges	14	6	1	6	1	5	89	8	821 1/	1	(1/)	910 1/
Oat, wild	3	--	--	--	3	2	2,014	--	---	1	6	2,020
Panicum, browntop	1	--	--	1	--	1	33	--	---	--	---	33
Pennycress	1	--	--	--	1	1	1,143	--	---	--	---	1,143
*Pigweeds 3/	29	7	5	10	7	18	5,642 1/	3	113	6	5,973	12,050 1/2/
Purslane	2	--	1	1	--	1	76	1	17	--	---	93
Pusley, Florida	2	--	--	2	--	1	38	--	---	1	30	68
Quackgrass	4	4	--	--	--	2	615 1/	1	9	1	10	634 1/
Radish, wild	1	1	--	--	--	1	77	--	---	--	---	77
*Ragweeds	12	5	3	4	--	8	1,001	3	1,462	1	17	2,480
Sandburs	1	--	1	--	--	--	---	--	---	--	---	8 2/
Sicklepod	2	--	--	2	--	--	---	2	130	--	---	130
Sida, prickly	1	--	--	1	--	--	---	1	9	--	---	9
Signalgrass	2	--	--	2	--	1	2	1	27	--	---	29
Smartweeds	1	--	--	1	--	1	21	--	---	--	---	21
Thistle, Russian	1	--	1	--	--	--	---	--	---	--	---	34 2/
*Thistles	6	2	2	--	2	3	741	2	101	1	29	871
Velvetleaf	3	1	2	--	--	1	116	2	401	--	---	517
Waterhemp	1	--	1	--	--	--	---	1	22	--	---	22

1/ No acreages estimated for weeds in West Virginia and less than 50 acres estimated for weeds in Hawaii.
2/ Weeds reported in Kansas and Arkansas not classified by infestation trend; however, counts and acreages are included in regional and total figures.
3/ Includes all amaranths.

Table 79.--Vegetable legumes: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Grasses, annual	50	Up	Nutsedge	20	Sta.	Pigweed	25	Up	----------	--	--	----------	--	--
Delaware	Jimsonweed	30	Sta.	Nutsedge	15	Sta.	Radish, wild	20	Sta.	Ragweed	30	Sta.	Velvetleaf	30	Sta.
Maine	Dandelion	15	Down	Mustard, wild	35	Up	Quackgrass	15	Up	----------	--	--	----------	--	--
Maryland	Crabgrass	60	Sta.	Lambsquarters	50	Up	Pigweed	75	Sta.	Ragweed	40	Up	Thistle, Canada	20	Sta.
New Hamnshire	Lambsquarters	60	Down	Morningglory	10	Sta.	Nutsedge	10	Sta.	Pigweed	60	Down	Quackgrass	70	Down
New Jersey	Crabgrass	25	Sta.	Cranesbill	15	Up	Nutsedge	40	Up	Pigweed	35	Sta.	Ragweed	35	Sta.
New York	Lambsquarters	90	Sta.	Nutsedge	20	Up	Pigweed, redroot	90	Sta.	Quackgrass	40	Sta.	Ragweed	40	Sta.
Pennsylvania	Foxtail	15	Down	Lambsquarters	25	Down	Pigweed, redroot	22	Down	Ragweed	10	Down	Thistle, Canada	8	Up
West Virginia	Barnyardgrass	50	Up	Lambsquarters	25	Up	Nutsedge	30	Up	Pigweed, redroot	15	Sta.	Quackgrass	20	Sta.
North Central:															
Illinois	Crabgrass	20	Down	Foxtail, giant	40	Down	Jimsonweed	10	Sta.	Lambsquarters	20	Down	Thistle, Canada	15	Down
Kansas	Kochia	20	Down	Pigweed	5	Down	Sandbur	5	Down	Thistle, Russian	20	Down	----------	--	--
Michigan	Groundcherry	10	Up	Lambsquarters	80	Down	Nutsedge	5	Up	Pigweed, rough	60	Down	Ragweed, common	20	Up
Missouri	Cocklebur	50	Up	Crabgrass	90	Up	Foxtail	90	Up	Ragweed	60	Sta.	Waterhemp	70	Up
Nebraska	Crabgrass	60	Sta.	Foxtail	100	Sta.	Kochia	55	Sta.	Nightshade, black	70	Up	Pigweed	100	Sta.
Ohio	Crabgrass	75	Sta.	Pigweed	75	Sta.	Purslane	75	Sta.	Ragweed	50	Up	Velvetleaf	40	Up
Wisconsin	Foxtail, green	100	Sta.	Nightshade, black	50	Up	Pigweed, redroot	100	Down	Thistle, Canada	25	Sta.	Velvetleaf	20	Up
Southern:															
Alabama	Crabgrass	100	Sta.	Mustard, wild	40	Up	Pigweed	60	Sta.	Pusley, Florida	50	Sta.	Ragweed	50	Sta.
Arkansas	Crabgrass, large	100	Down	Johnsongrass	75	Down	Pigweed	75	Down	----------	--	--	----------	--	--
Florida	Amaranth, spiny	60	Up	Bermudagrass	20	Up	Crabgrass, large	70	Sta.	Crowfootgrass	70	Sta.	Nutsedge, purple	20	Up
Georgia	Cocklebur	40	Up	Crabgrass	30	Down	Morningglory	80	Up	Nutsedge	20	Sta.	Sicklepod	70	Up
Kentucky	Crabgrass	100	Sta.	Foxtail, giant	100	Sta.	Morningglory	20	Sta.	Pigweed	30	Sta.	----------	--	--
Louisiana	Crabgrass	80	Sta.	Morningglory	70	Sta.	Nutsedge	60	Up	Pigweed	80	Sta.	Signalgrass	65	Up
Mississippi	Cocklebur	75	Sta.	Morningglory	10	Down	Pigweed	75	Up	Sida, prickly	60	Up	Signalgrass	15	Sta.
North Carolina	Cocklebur	30	Up	Crabgrass	100	Down	Goosegrass	50	Down	Lambsquarters	20	Sta.	Sicklepod	30	Up
Oklahoma	Bermudagrass	40	Up	Crabgrass	90	Sta.	Johnsongrass	90	Sta.	Lambsquarters	60	Sta.	Pigweed	90	Sta.
South Carolina	Crabgrass	40	Down	Nutsedge	50	Up	Pigweed	40	Sta.	Pusley, Florida	40	Down	Ragweed	40	Sta.
Tennessee	Cocklebur	10	Sta.	Crabgrass	80	Down	Nutsedge	20	Up	Ragweed	30	Sta.	Smartweed	10	Sta.
Texas	Carpetweed	10	Sta.	Crabgrass	50	Sta.	Panicum, browntop	40	Sta.	Pigweed	60	Sta.	Purslane, common	20	Up
Virginia	Crabgrass	50	Sta.	Lambsquarters	40	Sta.	Nutsedge	5	Sta.	Pigweed	50	Sta.	Ragweed	50	Sta.
Western:															
California	Barnyardgrass	60	Sta.	Nightshade	20	Up	Pigweed, redroot	40	Sta.	----------	--	--	----------	--	--
Idaho	Lambsquarters	50	Sta.	Oats, wild	60	Sta.	Pennycress, field	50	Sta.	Pigweed, redroot	50	Sta.	Thistle, Canada	10	Sta.
Montana	Foxtail, green	30	Up	Kochia	40	Sta.	Nightshade	10	Up	Oats, wild	5	Down	Pigweed, redroot	40	Sta.
New Mexico	Barnyardgrass	20	Down	Johnsongrass	15	Down	Kochia	5	Up	Lambsquarters	5	Sta.	Pigweed	20	Down
Oregon	Barnyardgrass	20	Sta.	Groundsel	10	Up	Lambsquarters	30	Sta.	Pigweed, redroot	50	Sta.	Thistle, Canada	10	Up
Utah	Bindweed, field	20	Up	Groundcherry	20	Up	Kochia	75	Sta.	Lambsquarters	40	Sta.	Pigweed, redroot	95	Sta.
Washington	Bindweed, field	10	Sta.	Fiddleneck, coast	60	Sta.	Lambsquarters	75	Sta.	Nightshade, black	60	Sta.	Oat, wild	25	Sta.
Wyoming	Barnyardgrass	50	Sta.	Foxtail, green	50	Down	Lambsquarters	40	Sta.	Nightshade	50	Up	Pigweed, redroot	60	Down
Hawaii	Nutsedge, purple	25	Down	----------	--	--	----------	--	--	----------	--	--	----------	--	--

1/Sta., stationary

Table 80.--Root and bulb crops: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	2/	0.4	---	8.00	15.00	----	100	--
Delaware	.2	.8	0.8	5.00	30.00	35.00	10	90
Maryland	2.8	---	---	11.00	----	----	100	--
Massachusetts	.2	.8	---	8.00	20.00	----	100	--
New Hampshire	2/	---	---	18.00	----	----	100	--
New Jersey	6	---	---	6.00	----	----	90	10
New York	---	---	20	----	----	75.00	95	5
Pennsylvania	.8	.4	---	25.00	35.00	----	100	--
West Virginia	2/	2/	---	20.00	30.00	----	100	--
Northeastern	10.0	2.4	20.8	8.94	25.00	73.46	90	10
Illinois	3.3	---	.9	16.00	----	20.00	95	5
Indiana	2	1	2	15.00	15.00	30.00	99	1
Iowa	2	---	---	8.00	----	----	100	--
Kansas	.4	---	---	10.00	----	----	100	--
Michigan	11	11	11	12.00	25.00	37.00	60	40
Minnesota	.2	.5	---	9.50	9.50	----	100	--
Ohio	.1	.1	.2	8.00	12.00	20.00	100	--
Wisconsin	6	---	---	15.00	----	----	30	70
North Central	25.0	12.6	14.1	13.10	23.49	34.68	66	34
Arkansas	.6	---	---	6.00	----	----	100	--
Florida	3	1	1	4.00	3.00	5.00	100	--
Georgia	.5	---	---	10.00	----	----	100	--
Mississippi	---	6	.2	----	8.00	12.00	100	--
North Carolina	5	---	---	8.00	----	----	90	10
Oklahoma	.3	---	---	6.00	----	----	100	--
South Carolina	1	---	1	10.00	----	10.00	90	10
Tennesse	1	---	---	18.00	----	----	90	10
Texas	13	13	---	5.00	3.00	----	50	50
Virginia	---	2	---	----	7.50	----	100	--
Southern	24.4	22.0	2.2	6.37	4.77	7.91	72	28
Arizona	---	4	---	----	6.00	----	50	50
California	---	30	40	----	12.00	24.00	20	80
Nevada	---	.5	---	----	5.00	----	100	--
New Mexico	2	---	---	3.25	----	----	15	85
Oregon	8	1	2	15.00	10.00	25.00	90	10
Utah	.6	.1	---	20.00	8.00	----	10	90
Washington	1	.8	2	20.00	15.00	35.00	40	60
Alaska	2/	2/	2/	28.00	48.00	30.00	100	--
Hawaii	.3	---	---	35.00	----	----	100	--
Western	11.9	36.4	44.0	14.20	11.24	24.55	31	69
United States	71.3	73.4	81.1	10.40	11.85	38.40	57	43

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 81.--Root and bulb crops: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Fair	Good	---	Sta.	Urgent	No	---
Delaware	Fair	Good	Good	Up	Some	No	---
Maryland	Good	---	---	Sta.	Some	No	---
Massachusetts	Fair	Fair	---	Sta.	Some	No	---
New Hampshire	Fair	---	---	Sta.	Some	No	---
New Jersey	Good	---	---	Up	Some	No	---
New York	---	---	Good	Sta.	Some	No	---
Pennsylvania	Fair	Good	---	Up	Some	No	---
West Virginia	Good	Fair	---	Up	Some	No	---
Northeastern	3-Good 5-Fair	3-Good 2-Fair	2-Good	4-Up 5-Sta.	1-Urgent 8-Some	9-No	---
Illinois	Good	---	Good	Sta.	Some	No	---
Indiana	Good	Fair	Fair	Up	Urgent	No	---
Iowa	Good	---	---	Up	Some	No	---
Kansas	Good	---	---	Sta.	Some	No	---
Michigan	Fair	Fair	Good	Up	Urgent	No	---
Minnesota	Good	Good	---	Sta.	Little	No	---
Ohio	Good	Good	Good	Sta.	Little	No	---
Wisconsin	Good	---	---	Up	Some	No	---
North Central	7-Good 1-Fair	2-Good 2-Fair	3-Good 1-Fair	4-Up 4-Sta.	2-Urgent 4-Some 2-Little	8-No	---
Arkansas	Good	---	---	Up	Some	No	---
Florida	Fair	Fair	Fair	Up	Some	No	---
Georgia	Good	---	---	Sta.	Some	No	---
Mississippi	---	Poor	Fair	Sta.	Urgent	No	---
North Carolina	Good	---	---	Up	Some	No	---
Oklahoma	Fair	---	---	Sta.	Some	No	---
South Carolina	Fair	---	Fair	Up	Urgent	No	---
Tennessee	Good	---	---	Up	Some	No	---
Texas	Good	Good	---	Up	Some	No	---
Virginia	---	Fair	---	Up	Some	No	---
Southern	5-Good 3-Fair	1-Good 2-Fair 1-Poor	3-Fair	7-Up 3-Sta.	2-Urgent 8-Some	10-No	---
Arizona	---	Good	---	Sta.	Little	No	---
California	---	Fair	Good	Up	Urgent	No	---
Nevada	---	Poor	---	Up	Urgent	No	---
New Mexico	Good	---	---	Up	Urgent	No	---
Oregon	Fair	Fair	Good	Up	Some	No	---
Utah	---	Fair	---	Up	Urgent	No	---
Washington	Good	Good	Good	Sta.	Some	No	---
Alaska	Fair	Fair	Fair	Up	Urgent	No	---
Hawaii	Fair	----	---	Up	Urgent	No	---
Western	2-Good 3-Fair	2-Good 4-Fair 1-Poor	3-Good 1-Fair	7-Up 2-Sta.	6-Urgent 2-Some 1-Little	9-No	---
United States	17-Good 12-Fair	8-Good 10-Fair 2-Poor	8-Good 5-Fair	22-Up 14-Sta.	11-Urgent 22-Some 3-Little	36-No	---

1/ Sta., stationary.

Table 82.--Root and bulb crops: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							100 acres		100 acres		100 acres	100 acres
*Barnyardgrass	7	2	1	--	4	6	99	1	(1/)	--	---	99 1/
Bermudagrass	3	--	--	3	--	2	229	1	(1/)	--	---	229 1/
Bindweed, field	1	--	--	--	1	--	---	1	2	--	---	2
*Chickweeds	5	1	1	2	1	3	20 1/	1	42	1	52	114 1/
Cockburs	3	--	--	3	--	2	199	1	52	--	---	251
*Crabgrasses	16	1	3	12	--	11	756 1/	1	5	2	196	976 1/2/
Crowfootgrass	1	--	--	1	--	1	(1/)	--	---	--	---	(1/)
Dodders	2	2	--	--	--	--	---	2	5	--	---	5
*Foxtails	8	2	4	1	1	4	125 1/	3	18	1	1	144 1/
Galinsogas	2	1	--	--	1	--	---	2	1 1/	--	---	1 1/
Goosefoot	1	--	--	--	1	1	34	--	---	--	---	34
Goosegrass	3	1	--	2	--	1	12	--	---	2	87	99
Grasses, annual	1	1	--	--	--	--	---	1	1	--	---	1
Groundsel, common	1	--	--	--	1	--	---	1	190	--	---	190
Hempnettle	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
Johnsongrass	3	--	--	3	--	2	27	--	---	--	---	41 2/
Kochia	1	--	--	--	1	--	---	1	4	--	---	4
*Lambsquarters	20	5	6	3	6	12	855 1/	2	3 1/	5	91	949 1/2/
Lovegrass	1	1	--	--	--	--	---	1	18	--	---	18
Mallow, dwarf	1	--	--	--	1	1	316	--	---	--	---	316
Mercury, three-seeded	1	--	1	--	--	--	---	--	---	--	---	2
*Morningglories	4	1	--	3	--	3	51	1	11	--	---	62
Mustards	2	--	1	--	1	1	10	1	49	--	---	59
Nettle, burning	1	--	--	--	1	1	158	--	---	--	---	158
Nightshades	2	--	--	--	2	2	44	--	---	--	---	44
*Nutsedges	13	4	--	8	1	2	11	8	130 2/	2	20 1/	175 1/2/
Panicums	2	1	1	--	--	--	---	2	29	--	---	29
Pepperweed	1	1	--	--	--	1	(1/)	--	---	--	---	(1/)
*Pigweeds	21	4	5	8	4	12	849	4	98 1/	4	106	1,054 1/2/
Pineappleweed	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
*Purslane	9	2	5	1	1	4	211	1	2	4	246	459
Quackgrass	4	3	--	--	1	--	---	2	(1/)	2	24	24 1/
*Ragweeds	5	2	1	2	--	1	50	1	6	3	4 1/	60 1/
Rockets	3	--	--	1	2	2	549	1	253	--	---	802
Sandburs	1	--	--	1	--	1	132	--	---	--	---	132
Shepherdspurse	2	1	--	--	1	--	---	2	10 1/	--	---	10 1/
Sicklepod	2	--	--	2	--	1	51	1	52	--	---	103
Signalgrass	1	--	--	1	--	--	---	1	378	--	---	378
Smartweeds	4	--	3	1	--	2	21	1	13	1	3	37
Sunflower	1	--	--	1	--	1	330	--	---	--	---	330
Swinecress	1	--	--	--	1	--	---	1	1	--	---	1
Tansymustard	1	--	--	1	--	1	198	--	---	--	---	198
Tasselflower, red	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
Thistle, Canada	1	--	--	--	1	--	---	1	7	--	---	7
Velvetleaf	1	--	1	--	--	--	---	--	---	--	---	(2/)

1/ Acreages estimated less than 50 acres for some or all weeds reported in Connecticut, Delaware, West Virginia, Florida, Kentucky, Alaska, and Hawaii.
2/ Weeds reported in Kansas and Arkansas not classified by infestation trend; however, counts and acreages are included in regional and total figures.
3/ Includes all amaranths.

Table 83.--Root and bulb crops: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Chickweed	15	Sta.	Galinsoga	10	Up	Grasses, annual	20	Up	Pepperweed	10	Sta.	Ragweed	10	Down
Delaware	Dodder, field	1	Up	----------	--	--	----------	--	--	----------	--	--	----------	--	--
Maryland	Crabgrass	60	Sta.	Goosegrass	40	Sta.	Lambsquarters	50	Sta.	Lovegrass	60	Up	Pigweed	50	Sta.
New Hampshire	Lambsquarters	60	Down	Morningglory	10	Sta.	Nutsedge	10	Sta.	Pigweed	60	Down	Quackgrass	70	Down
New Jersey	Barnyardgrass	30	Sta.	Dodder	5	Up	Nutsedge	35	Up	Panicum, fall	25	Up	Shepherdspurse	10	Up
New York	Lambsquarters	90	Sta.	Nutsedge	10	Down	Pigweed, redroot	50	Sta.	Purslane	90	Sta.	Quackgrass	10	Down
Pennsylvania	Foxtail, yellow	18	Down	Lambsquarters	15	Down	Pigweed, redroot	20	Down	Purslane	8	Down	Ragweed	10	Down
West Virginia	Barnyardgrass	20	Up	Foxtails	15	Sta.	Lambsquarters	35	Up	Nutsedge	25	Up	Quackgrass	40	Up
North Central:															
Illinois	Lambsquarters	25	Down	Purslane	30	Down	Ragweed	20	Down	Smartweed	20	Down	----------	--	--
Indiana	Crabgrass	40	Up	Foxtails	30	Up	Panicums	40	Up	Pigweed	80	Sta.	----------	--	--
Iowa	Barnyardgrass	75	Sta.	Foxtails	75	Up	Lambsquarters, common	50	Sta.	Pigweed, redroot	50	Sta.	Purslane, common	50	Up
Kansas	Crabgrass	10	--	Lambsquarters	5	--	Mercury, three-seeded	20	--	Pigweed	10	--	Velvetleaf	3	--
Michigan	Chickweed, common	40	Down	Lambsquarters	60	Down	Pigweed, rough	70	Down	Purslane, common	90	Down	Smartweed	10	Up
Ohio	Crabgrass	75	Sta.	Foxtail	75	Up	Lambsquarters	40	Sta.	Purslane	75	Sta.	Smartweed	30	Sta.
Wisconsin	Foxtail, green	100	Sta.	Lambsquarters	100	Sta.	Mustard, wild	40	Up	Pigweed, redroot	100	Sta.	Purslane, common	100	Down
Southern:															
Alabama	Crabgrass	100	Sta.	Johnsongrass	40	Sta.	Nutsedge	20	Sta.	Pigweed	50	Up	Smartweed	30	Sta.
Arkansas	Crabgrass	100	--	Johnsongrass	75	--	Nutsedge	75	--	----------	--	--	----------	--	--
Florida	Amaranth, spiny	40	Up	Bermudagrass	20	Up	Crabgrass, large	60	Sta.	Crowfootgrass	60	Sta.	Nutsedge, purple	15	Up
Georgia	Chickweed	50	Uo	Crabgrass	80	Sta.	Morningglory	50	Sta.	Nutsedge	80	Up	Sicklepod	60	Sta.
Kentucky	Crabgrass	100	Sta.	Foxtail	100	Sta.	----------	--	--	----------	--	--	----------	--	--
Louisiana	Bermudagrass	40	Sta.	Cocklebur	35	Sta.	Crabgrass	80	Sta.	Pigweed	85	Sta.	Signalgrass	70	Up
Mississippi	Crabgrass	97	Sta.	Morningglory	10	Up	Nutsedge	5	Up	Pigweed	60	Up	Ragweed	45	Sta.
North Carolina	Cocklebur	30	Up	Crabgrass	100	Down	Goosegrass	40	Down	Lambsquarters	20	Sta.	Sicklepod	30	Up
Oklahoma	Crabgrass	95	Sta.	Johnsongrass	85	Sta.	Lambsquarters	80	Sta.	Pigweed	80	Sta.	Purslane	50	Sta.
South Carolina	Cocklebur	40	Sta.	Crabgrass	90	Sta.	Nutsedge	25	Uo	Pigweed	25	Up	Ragweed	25	Up
Tennessee	Crabgrass	80	Down	Goosegrass	60	Down	Morningglory	30	Sta.	Nutsedge	10	Up	Pigweed	60	Sta.
Texas	Lambsquarters	30	Sta.	Rocket, London	75	Sta.	Sandbur	20	Sta.	Sunflower	50	Sta.	Tansymustard	30	Sta.
Virginia	Bermudagrass	10	Sta.	Chickweed	15	Sta.	Crabgrass	30	Sta.	Nutsedge	10	Up	Pigweed	40	Sta.
Western:															
Arizona	Goosefoots	50	Sta.	Rocket, London	80	Sta.	----------	--	--	----------	--	--	----------	--	--
California	Groundsel, common	30	Up	Lambsquarters	40	Sta.	Mallow, dwarf	50	Sta.	Nettle, burning	25	Sta.	Rocket, London	40	Up
New Mexico	Barnyardgrass	20	Sta.	Carelessweed	20	Down	Foxtail, green	5	Sta.	Kochia	10	Up	Lambsquarters	10	Down
Oregon	Barnyardgrass	20	Sta.	Lambsquarters	10	Sta.	Nightshade	20	Sta.	Pigweed, redroot	20	Sta.	Purslane	10	Sta.
Utah	Barnyardgrass	50	Sta.	Bindweed, field	20	Up	Lambsquarters	30	Up	Mustard, black	90	Sta.	Pigweed, redroot	90	Sta.
Washington	Barnyardgrass	70	Sta.	Lambsquarters	50	Sta.	Nightshade, black	50	Sta.	Pigweed, redroot	75	Sta.	Thistle, Canada	15	Up
Alaska	Chickweed	100	Sta.	Hempnettle	80	Up	Pineappleweed	90	Up	Quackgrass	75	Up	Shepherdspurse	90	Up
Hawaii	Galinsoga, smallfl.2/	50	Up	Lambsquarters, common	30	Sta.	Nutsedge, purple	30	Down	Swinecress	50	Up	Tasselflower, red	25	Sta.

1/Sta., stationary.
2/Galinsoga, smallflower.

Table 84.--Vine crops: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	0.2	---	---	6.00	----	----	100	---
Delaware	1.5	---	0.5	8.00	----	18.00	100	---
Maine	.8	---	---	10.00	----	----	100	---
Maryland	7.3	---	---	10.00	----	----	100	---
Massachusetts	3	---	---	12.00	----	----	100	---
New Hampshire	---	2/	---	----	60.00	----	100	---
New Jersey	1	---	---	12.00	----	----	90	10
New York	3	---	---	20.00	----	----	95	5
Pennsylvania	2	---	---	14.00	----	----	100	---
West Virginia	2/	2/	---	25.00	35.00	----	100	---
Northeast	18.8	2/	.5	12.24	47.50	18.00	99	1
Illinois	4	---	---	7.00	----	----	70	30
Indiana	3	---	---	10.00	----	----	99	1
Kansas	2	---	---	10.00	----	----	80	20
Michigan	25	---	---	15.00	----	----	75	25
Minnesota	1	---	---	9.00	----	----	50	50
Ohio	.5	---	---	12.00	----	----	100	---
Wisconsin	15	---	---	7.00	----	----	50	50
North Central	50.5	---	---	11.35	----	----	69	31
Arkansas	.4	---	---	12.00	----	----	100	---
Florida	4	1	2	4.00	3.00	5.00	95	5
Georgia	.5	---	---	5.00	----	----	100	---
Kentucky	2/	---	---	7.00	----	----	100	---
Louisiana	.5	---	---	10.00	----	----	98	2
Mississippi	.5	2	---	10.00	7.00	----	100	---
North Carolina	10	---	---	12.00	----	----	90	10
Oklahoma	2	---	---	7.50	----	----	100	---
South Carolina	4	---	---	10.00	----	----	90	10
Tennessee	1	---	---	15.00	----	----	90	10
Texas	3	---	---	6.00	----	----	90	10
Virginia	.5	---	---	10.50	----	----	100	---
Southern	26.4	3.0	2.0	9.34	5.67	5.00	93	7
Arizona	2	---	---	8.00	----	----	20	80
California	2	---	---	15.00	----	----	100	---
Oregon	1	---	---	20.00	----	----	80	20
Washington	1	---	1	15.00	----	15.00	40	60
Hawaii	.5	---	---	35.00	----	----	100	---
Western	6.5	---	1.0	15.15	----	15.00	60	40
United States	102.2	3.0	3.5	11.24	5.67	9.71	81	19

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 85.--Vine crops: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Poor	---	---	Sta.	Urgent	No	---
Delaware	Poor	---	Poor	Up	Urgent	No	---
Maine	Fair	---	---	Up	Urgent	No	---
Maryland	Fair	---	---	Up	Urgent	No	---
Massachusetts	Poor	---	---	Sta.	Urgent	No	---
New Hampshire	---	Fair	---	Sta.	Some	No	---
New Jersey	Good	---	---	Up	Urgent	No	---
New York	Fair	---	---	Up	Urgent	No	---
Pennsylvania	Fair	---	---	Up	Urgent	No	---
West Virginia	Fair	Poor	---	Up	Some	No	---
Northeastern	1-Good 5-Fair 3-Poor	1-Fair 1-Poor	1-Poor	7-Up 3-Sta.	8-Urgent 2-Some	10-No	---
Illinois	Fair	---	---	Up	Urgent	No	---
Indiana	Good	---	---	Up	Urgent	No	---
Kansas	Fair	---	---	Sta.	Urgent	No	---
Michigan	Poor	---	---	Up	Urgent	No	---
Minnesota	Good	---	---	Sta.	Urgent	No	---
Ohio	Fair	---	---	Up	Urgent	No	---
Wisconsin	Poor	---	---	Sta.	Urgent	No	---
North Central	2-Good 3-Fair 2-Poor	---	---	4-Up 3-Sta.	7-Urgent	7-No	---
Arkansas	Poor	---	---	Up	Urgent	No	---
Florida	Poor	Poor	Poor	Up	Urgent	No	---
Georgia	Fair	---	---	Up	Some	No	---
Kentucky	Poor	---	---	Up	Urgent	No	---
Louisiana	Good	---	---	Up	Little	No	---
Mississippi	Fair	Poor	---	Up	Urgent	Yes	40
North Carolina	Fair	---	---	Up	Urgent	No	---
Oklahoma	Fair	---	---	Up	Some	No	---
South Carolina	Good	---	---	Up	Some	No	---
Tennessee	Fair	---	---	Up	Some	No	---
Texas	Good	---	---	Up	Urgent	Yes	90
Virginia	Fair	---	---	Up	Urgent	No	---
Southern	3-Good 6-Fair 3-Poor	2-Poor	1-Poor	12-Up	7-Urgent 4-Some 1-Little	2-Yes 10-No	12
Arizona	Good	---	---	Up	Urgent	No	---
California	Poor	---	---	Up	Urgent	No	---
Oregon	Fair	---	---	Up	Urgent	No	---
Washington	Good	---	Poor	Up	Urgent	No	---
Hawaii	Fair	---	---	Sta.	Some	No	---
Western	2-Good 2-Fair 1-Poor	---	1-Poor	4-Up 1-Sta.	4-Urgent 1-Some	5-No	---
United States	8-Good 16-Fair 9-Poor	1-Fair 3-Poor	3-Poor	27-Up 7-Sta.	26-Urgent 7-Some 1-Little	2-Yes 32-No	3

1/ Sta., stationary.

Table 86.--Vine crops: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							100 acres		100 acres		100 acres	100 acres
Barley, wild	1	--	--	1	--	--	---	1	(1/)	--	---	(1/)
*Barnyardgrass	9	2	1	--	6	8	620 1/	1	187	--	---	807 1/
Bermudagrass	2	--	--	2	--	--	---	2	236	--	---	236
Bindweed, field	1	--	--	--	1	--	---	1	1	--	---	1
*Cockleburs	5	--	--	5	--	3	336 1/	2	62	--	---	398 1/
*Crabgrasses	19	2	4	13	--	11	2,313 1/	3	138 1/	3	610	3,153 1/2/
Crowfootgrass	1	--	--	1	--	1	464	--	---	--	---	464
*Foxtails	8	2	4	1	1	5	243 1/	1	38	2	104	385 1/
Galinsoga	1	--	--	--	1	--	---	1	1	--	--	1
Goosegrass	2	1	--	1	--	1	31	--	---	1	236	267
Grasses, annual	2	2	--	--	--	1	1	1	(1/)	--	---	1 1/
Horsetail	1	--	--	--	1	1	2	--	---	--	---	2
Jimsonweed	2	--	2	--	--	1	7	1	10	--	---	17
Johnsongrass	3	--	--	3	--	1	130	1	18	--	---	221 2/
Kochia	1	--	--	--	1	--	---	1	1	--	---	1
*Lambsquarters	21	8	5	3	5	13	864 1/	3	77	4	250	1,191 1/2/
Mallows	2	--	--	--	2	1	1	1	(1/)	--	---	1 1/
Mercury, three-seeded	1	--	1	--	--	--	---	--	---	--	---	1 1/
Morningglories	4	1	--	3	--	2	292	2	15 1/	--	---	307 1/
Mustards	2	1	--	--	1	2	6	--	---	--	---	6
Nightshade, black	1	--	--	--	1	1	16	--	---	--	---	16
*Nutsedges	7	3	--	3	1	5	242	2	127	--	---	369
*Pigweeds 3/	29	8	6	10	5	19	1,327 1/	4	393 1/	4	212	2,024 1/2/
Poorjoe	2	--	--	2	--	--	---	1	57	--	---	130 2/
Punctureweed	2	--	--	--	2	2	78	--	---	--	---	78
*Purslane	5	2	2	--	1	4	176	--	---	1	9	185
Pusley, Florida	4	--	--	3	1	1	76	2	284	1	1	361
Quackgrass	3	3	--	--	--	1	11	1	2	1	5	18
*Ragweeds	12	5	2	5	--	6	207	4	100	2	11	318 1/
Rocket, London	1	--	--	1	--	1	810	--	---	--	---	810
*Sandburs	5	--	2	2	1	4	407	1	242	--	---	649
Sicklepod	1	--	--	1	--	--	---	1	340	--	---	340
Smartweeds	3	2	1	--	--	1	9	2	10 1/	--	---	19 1/
Sunflower	1	--	--	1	--	1	540	--	---	--	---	540
Tasselflower, red	1	--	--	--	1	--	---	1	1	--	---	1
Thistle, Canada	1	--	--	--	1	1	5	--	---	--	---	5
Velvetleaf	3	--	3	--	--	--	---	2	23	--	---	23 2/
Watergrasses (complex)	1	--	--	--	1	1	156	--	---	--	---	156

1/ Acreages of weeds in Connecticut, West Virginia, and Tennessee not estimated; less than 50 acres estimated for some weeds in Idaho and New Mexico.

2/ Weeds in Kansas and Arkansas not classified by infestation trend; counts and acreages included in regional and total figures.

3/ Includes all amaranths.

Table 87.--Wine crops: Five most important weeds listed alphabetically by states within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Grasses, annual	50	Up	Lambsquarters	50	Sta.	Pigweed	50	Sta.	----------	--	--	----------	--	--
Delaware	Lambsquarters	50	Sta.	Nutsedge	15	Sta.	Purslane	15	Sta.	Ragweed	50	Sta.	Smartweed	25	Sta.
Maine	Grasses, annual	20	Sta.	Lambsquarters	85	Sta.	Mustard, wild	30	Sta.	Pigweed, redroot	85	Sta.	Quackgrass	35	Up
Maryland	Crabgrass	60	Sta.	Goosegrass	40	Sta.	Lambsquarters	70	Up	Pigweed	60	Sta.	Ragweed	50	Up
New Hampshire	Lambsquarters	60	Down	Morningglory	10	Sta.	Nutsedge	60	Down	Pigweed	60	Down	Quackgrass	70	Down
New Jersey	Barnyardgrass	50	Sta.	Foxtail	60	Sta.	Lambsquarters	40	Sta.	Pigweed	45	Sta.	Ragweed	55	Sta.
New York	Lambsquarters	90	Sta.	Nutsedge	25	Up	Pigweed, redroot	75	Sta.	Purslane	30	Sta.	Quackgrass	25	Sta.
Pennsylvania	Foxtail, yellow	20	Down	Lambsquarters	35	Down	Pigweed, redroot	30	Down	Ragweed	20	Down	----------	--	--
West Virginia	Barnyardgrass	25	Sta.	Crabgrass	60	Up	Pigweed, redroot	50	Up	Ragweed, common	40	Up	Smartweed, Pa.	20	Up
North Central:															
Illinois	Crabgrass	25	Down	Jimsonweed	15	Sta.	Purslane	20	Down	Ragweed	20	Down	----------	--	--
Indiana	Jimsonweed	10	Up	Lambsquarters	20	Up	Pigweed	30	Up	Smartweed	10	Up	Velvetleaf	10	Up
Iowa	Foxtails	150	Sta.	Lambsquarters, common	150	Sta.	Pigweed, redroot	150	Sta.	Sandbur	100	Sta.	----------	--	--
Kansas	Crabgrass	10	--	Lambsquarters	5	--	Mercury, three-seeded	20	--	Pigweed	10	--	Velvetleaf	3	--
Michigan	Crabgrass, large	50	Down	Foxtail, green	40	Down	Lambsquarters	95	Down	Pigweed, rough	80	Down	Purslane	60	Sta.
Ohio	Crabgrass	75	Sta.	Foxtail	75	Up	Pigweed	75	Sta.	Ragweed	40	Sta.	Velvetleaf	25	Up
Wisconsin	Barnyardgrass	100	Up	Foxtail, green	100	Sta.	Lambsquarters, common	100	Sta.	Pigweed, redroot	100	Sta.	Sandbur, field	100	Sta.
Southern:															
Alabama	Cocklebur	20	Up	Crabgrass	100	Sta.	Nutsedge	20	Sta.	Pigweed	50	Sta.	Pusley, Florida	40	Sta.
Arkansas	Crabgrass, large	100	--	Johnsongrass	80	--	Pigweed	100	--	Poorjoe	80	--	----------	--	--
Florida	Amaranth, spiny	40	Up	Bermudagrass	20	Up	Crabgrass, large	60	Sta.	Crowfootgrass	60	Sta.	Nutsedge, purple	15	Up
Georgia	Cocklebur	50	Sta.	Crabgrass	90	Sta.	Morningglory	60	Sta.	Sandbur	50	Up	Sicklepod	70	Up
Kentucky	Crabgrass	100	Sta.	Foxtail	100	Sta.	Pigweed	30	Sta.	----------	--	--	----------	--	--
Louisiana	Crabgrass	80	Sta.	Pigweed	65	Sta.	Poorjoe	70	Up	Pusley, Florida	60	Up	Ragweed	45	Up
Mississippi	Cocklebur	20	Up	Crabgrass	75	Up	Johnsongrass	15	Up	Pigweed	45	Up	Ragweed	20	Up
North Carolina	Cocklebur	20	Sta.	Crabgrass	100	Down	Goosegrass	50	Down	Lambsquarters	20	Sta.	Pigweed	20	Sta.
Oklahoma	Bermudagrass	50	Up	Crabgrass	90	Sta.	Johnsongrass	80	Sta.	Lambsquarters	80	Sta.	Pigweed	85	Sta.
South Carolina	Crabgrass	90	Sta.	Nutsedge	50	Sta.	Pigweed	50	Sta.	Pusley, Florida	60	Up	Ragweed	30	Sta.
Tennessee	Burley, wild	40	Up	Cocklebur	35	Sta.	Crabgrass	75	Sta.	Morningglory	35	Up	Ragweed	60	Sta.
Texas	Crabgrass	50	Sta.	Rocket, London	75	Sta.	Sandbur	20	Sta.	Sunflower	50	Sta.	----------	--	--
Virginia	Crabgrass	50	Up	Lambsquarters	40	Sta.	Morningglory	15	Up	Pigweed	45	Sta.	Ragweed	30	Sta.
Western:															
Arizona	Puncturevine	40	Sta.	Watergrass	85	Sta.	----------	--	--	----------	--	--	----------	--	--
California	Barnyardgrass	65	Sta.	Lambsquarters	35	Sta.	Pigweed, redroot	40	Sta.	----------	--	--	----------	--	--
Idaho	Barnyardgrass	10	Sta.	Mallow, low	2	Up	Pigweed, redroot	10	Sta.	Puncturevine	70	Sta.	Sandbur	60	Sta.
New Mexico	Barnyardgrass	20	Sta.	Carelessweed	20	Down	Foxtail, green	5	Sta.	Kochia	10	Up	Lambsquarters	10	Down
Oregon	Barnyardgrass	50	Sta.	Lambsquarters	70	Sta.	Pigweed, redroot	70	Sta.	Purslane	30	Sta.	----------	--	--
Utah	Barnyardgrass	50	Sta.	Bindweed, field	20	Up	Lambsquarters	30	Up	Mustard, black	80	Sta.	Pigweed, redroot	90	Sta.
Washington	Barnyardgrass	70	Sta.	Horsetail	5	Sta.	Lambsquarters	50	Sta.	Nightshade, black	50	Sta.	Thistle, Canada	15	Sta.
Hawaii	Galinsoga, smallfl.2/	35	Up	Mallow, little	25	Sta.	Nutsedge, purple	45	Sta.	Pusley, Florida	20	Down	Tasselflower, red	35	Up

1/Sta., stationary.
2/Galinsoga, smallflower.

Table 88.—Solanaceous fruits: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and Region	Acres treated			Average cost per acre			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	0.2	1.8	---	10.00	12.00	---	90	10
Delaware	2	.6	---	12.00	18.00	---	100	---
Maine	2/	---	---	9.00	---	---	100	---
Maryland	7.2	---	---	10.00	---	---	100	---
Massachusetts	.5	.5	---	12.00	12.00	---	100	---
New Jersey	6	---	---	7.00	---	---	90	10
New York	5	---	---	20.00	---	---	90	10
West Virginia	---	.4	0.1	---	35.00	50.00	100	---
Northeastern	20.9	3.3	.1	11.77	15.88	50.00	95	5
Illinois	5	---	---	8.00	---	---	90	10
Indiana	10	---	---	10.00	---	---	99	1
Kansas	.8	---	---	10.00	---	---	100	---
Michigan	8	---	---	18.00	---	---	75	25
Ohio	12	5	---	6.00	12.00	---	50	50
North Central	35.8	5.0	---	10.17	12.00	---	73	27
Alabama	5	---	---	8.00	---	---	90	10
Arkansas	3	---	---	7.50	---	---	100	---
Florida	20	5	20	4.00	4.00	7.00	95	5
Georgia	.5	---	---	5.00	---	---	100	---
Kentucky	.3	---	---	10.00	---	---	100	---
Louisiana	1	---	---	10.00	---	---	95	5
Mississippi	2	.5	---	7.00	10.00	---	100	---
North Carolina	4	---	---	15.00	---	---	90	10
Oklahoma	.3	---	---	4.50	---	---	100	---
South Carolina	6	---	---	10.00	---	---	90	10
Texas	3	---	---	6.00	---	---	90	10
Virginia	3	3	---	10.00	11.50	---	90	10
Southern	48.1	8.5	20.0	7.10	7.00	7.00	94	6
California	115	---	5	20.00	---	28.00	50	50
Oregon	.5	---	---	15.00	---	---	100	---
Utah	1	---	---	6.00	---	---	10	90
Hawaii	.3	---	---	35.00	---	---	100	---
Western	116.8	---	5.0	19.90	---	28.00	50	50
United States	221.6	16.8	25.1	14.78	10.23	11.35	71	29

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 89.--Solanaceous fruits: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Good	Good	---	Up	Some	No	---
Delaware	Fair	Fair	Fair	Sta.	Some	No	---
Maine	Poor	---	---	Down	Urgent	No	---
Maryland	Fair	---	---	Sta.	Some	No	---
Massachusetts	Fair	Fair	---	Sta.	Some	No	---
New Jersey	Good	---	---	Up	Urgent	No	---
New York	Fair	---	---	Sta.	Urgent	No	---
West Virginia	---	Good	Fair	Up	Urgent	Yes	15
Northeastern	2-Good 4-Fair 1-Poor	2-Good 2-Fair	2-Fair	3-Up 4-Sta. 1-Down	4-Urgent 4-Some	1-Yes 7-No	---
Illinois	Fair	---	---	Up	Some	Yes	10
Indiana	Fair	---	---	Up	Urgent	No	---
Kansas	Good	---	---	Up	Urgent	Yes	35
Michigan	Fair	---	---	Up	Some	No	---
Ohio	Good	Good	---	Up	Some	Yes	20
North Central	2-Good 3-Fair	1-Good	---	5-Up	2-Urgent 3-Some	3-Yes 2-No	10
Alabama	Fair	---	---	Up	Some	No	---
Arkansas	Good	---	---	Up	Little	No	---
Florida	Good	Fair	Good	Up	Some	No	---
Georgia	Fair	---	---	Up	Some	No	---
Kentucky	Good	---	---	Up	Some	No	---
Louisiana	Good	---	---	Up	Little	No	---
Mississippi	Good	Fair	---	Up	Some	No	---
North Carolina	Fair	---	---	Up	Urgent	No	---
Oklahoma	Fair	---	---	Up	Little	No	---
South Carolina	Good	---	---	Up	Some	No	---
Texas	Good	---	---	Up	Some	Yes	10
Virginia	Fair	Fair	---	Up	Some	Yes	20
Southern	7-Good 5-Fair	3-Fair	1-Good	12-Up	1-Urgent 8-Some 3-Little	2-Yes 10-No	2
California	Fair	---	Good	Sta.	Some	No	---
Oregon	Good	---	---	Sta.	Little	No	---
Utah	Good	---	---	Up	Some	No	---
Hawaii	Fair	---	---	Sta.	Urgent	No	---
Western	2-Good 2-Fair	---	1-Good	1-Up 3-Sta.	1-Urgent 2-Some 1-Little	4-No	---
United States	13-Good 14-Fair 1-Poor	3-Good 5-Fair	2-Good 2-Fair	21-Up 7-Sta. 1-Down	8-Urgent 17-Some 4-Little	6-Yes 23-No	2

1/ Sta., stationary.

Table 90.--Solanaceous fruits: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							100 acres		100 acres		100 acres	100 acres
Apple-of-Peru	1	--	--	--	1	1	1	--	---	--	---	1
*Barnyardgrass	7	2	1	--	4	4	2,090	2	8	1	(1/)	2,098 1/
Bermudagrass	2	--	--	2	--	--	---	2	602	--	---	602
Bindweed, field	1	--	--	--	1	--	---	1	5	--	---	5 1/
Cockleburs	4	--	--	4	--	2	26	2	50	--	---	76
*Crabgrasses	15	1	1	13	--	9	835	2	8	2	50	931 2/
*Foxtails	7	3	2	1	1	4	258	--	---	3	67 1/	325 1/
Galinsogas	3	2	--	1	--	1	10	2	87	--	---	97
Goosegrass	2	--	--	2	--	--	---	1	19	1	8	27
Grasses, annual	2	2	--	--	--	1	(1/)	--	---	1	3	3 1/
Groundcherry	1	--	1	--	--	--	---	1	26	--	---	26
Groundsels	1	--	--	--	1	1	2	--	---	--	---	2
Jimsonweed	3	2	1	--	--	1	7	2	139	--	---	146
Johnsongrass	3	--	--	2	1	2	5	--	---	--	---	43 2/
Kochia	1	--	--	--	1	--	---	1	1	--	---	1
*Lambsquarters	11	5	1	2	3	7	1,258 1/	--	---	3	28 1/	1,286 1/2/
Mallows	2	--	1	--	1	--	---	1	106	1	(1/)	106 1/
Mercury, three-seeded	1	--	1	--	--	--	---	--	---	--	---	1 2/
*Morninglories	7	1	1	5	--	4	58 1/	3	52	--	---	110 1/
Mustards	2	1	--	--	1	2	1 1/	--	---	--	---	1 1/
*Nightshades	9	1	1	2	5	4	10	5	986	--	---	996
*Nutsedges	13	6	1	5	1	3	22 1/	10	360	--	--	382 1/
Panicum, fall	1	1	--	--	--	--	---	1	142	--	---	142
Pepperweed	1	1	--	--	--	--	---	1	1	--	--	1
*Pigweeds 3/	25	5	4	11	5	15	1,398 1/	2	243	6	429	2,104 1/2/
*Purslane	6	3	1	1	1	5	646	--	---	1	14	660
Quackgrass	3	3	--	--	--	2	42 1/	--	---	1	(1/)	42 1/
*Ragweeds	13	4	4	5	--	5	122	6	306	2	34	462
Rocket, London	1	--	--	1	--	1	180	--	---	--	---	180
Sicklepod	1	--	--	1	--	--	---	1	28	--	---	28
Sida, prickly	1	--	--	1	--	--	---	1	2	--	---	2
Signalgrass	1	--	--	1	--	--	---	1	18	--	---	18
Smartweeds	3	--	2	1	--	2	58	1	91	--	---	149
Sunflower	1	--	--	1	--	1	120	--	---	--	---	120
Tasselflower, red	1	--	--	--	1	1	1	--	---	--	---	1
Thistles	2	--	1	--	1	--	---	2	106	--	---	106
Velvetleaf	6	2	4	--	--	3	129	2	225	--	---	354 2/

1/ Acreages of weeds reported in Maine and New Hampshire not estimated; less than 50 acres estimated for some weeds in New Mexico, Washington, and Hawaii.

2/ Weeds reported in Kansas and Arkansas not classified by infestation trend; counts and acreage estimates included in regional and total figures.

3/ Includes all amaranths.

Table 91.--Solanaceous fruits: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1964

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Galinsoga	5	Up	Grasses, annual	15	Down	Lambsquarters	10	Down	Pepperweed	5	Up	--	--	--
Delaware	Jimsonweed	40	Sta.	Nutsedge	15	Sta.	Purslane	20	Sta.	Ragweed	40	Sta.	Velvetleaf	20	Sta.
Maine	Grasses, annual	20	Sta.	Lambsquarters	30	Sta.	Mustard, wild	30	Sta.	Pigweed, redroot	30	Sta.	Quackgrass	40	Sta.
Maryland	Foxtail	70	Sta.	Jimsonweed	50	Up	Nutsedge	20	Up	Pigweed	60	Sta.	Ragweed	60	Up
New Hampshire	Lambsquarters	60	Down	Morningglory	10	Sta.	Nutsedge	10	Sta.	Pigweed	60	Down	Quackgrass	70	Down
New Jersey	Barnyardgrass	60	Sta.	Foxtail	50	Sta.	Nutsedge	45	Up	Panicum, fall	40	Up	Velvetleaf	35	Sta.
New York	Lambsquarters	90	Sta.	Nutsedge	35	Up	Pigweed, redroot	75	Sta.	Purslane	30	Sta.	Quackgrass	35	Sta.
Pennsylvania	Foxtail, yellow	30	Down	Galinsoga	8	--	Lambsquarters	20	Down	Pigweed, redroot	25	Down	Ragweed	15	Down
Rhode Island	Purslane	75	Sta.	--	--	--	--	--	--	--	--	--	--	--	--
West Virginia	Barnyardgrass	60	Up	Crabgrass	40	Up	Nightshade, black	80	Up	Nutsedge	25	Up	Ragweed, common	50	Up
North Central:															
Illinois	Foxtail, giant	40	Down	Pigweed	30	Down	Purslane	20	Down	Ragweed	20	Down	--	--	--
Indiana	Jimsonweed	40	Up	Morningglory, ivyleaf	10	Up	Ragweed	20	Up	Smartweeds	40	Up	Velvetleaf	60	Up
Iowa	Barnyardgrass	67	Sta.	Foxtails	67	Sta.	Smartweed, Pa.	67	Sta.	Velvetleaf	67	Sta.	--	--	--
Kansas	Crabgrass	10	--	Lambsquarters	5	--	Mercury, three-seeded	20	--	Pigweed	10	--	Velvetleaf	3	--
Michigan	Groundcherry	20	Up	Nightshade, black	20	Up	Nutsedge	5	Up	Pigweed, rough	85	Down	Ragweed, common	25	Up
Ohio	Mallow, Venice	30	Up	Pigweed	75	Down	Ragweed	40	Up	Thistle, Canada	30	Up	Velvetleaf	25	Up
Southern:															
Alabama	Crabgrass	100	Sta.	Nutsedge	20	Sta.	Pigweed	50	Sta.	Ragweed	30	Up	Smartweed	60	Sta.
Arkansas	Crabgrass, large	100	--	Johnsongrass	90	--	Pigweed	90	--	--	--	--	--	--	--
Florida	Amaranth, spiny	40	Up	Bermudagrass	10	Up	Crabgrass, large	70	Sta.	Nightshade, black	70	Up	Nutsedge, purple	20	Up
Georgia	Cocklebur	50	Up	Crabgrass	50	Sta.	Morningglory	80	Up	Pigweed	50	Sta.	Sicklepod	80	Up
Kentucky	Crabgrass	100	Sta.	Foxtail, giant	100	Sta.	Nightshade	10	Sta.	Pigweed	20	Sta.	--	--	--
Louisiana	Crabgrass	80	Sta.	Goosegrass	60	Up	Morningglory	40	Sta.	Pigweed	75	Sta.	Signalgrass	55	Up
Mississippi	Cocklebur	75	Sta.	Crabgrass	95	Up	Nutsedge	15	Up	Pigweed	40	Up	Sida, prickly	25	Up
North Carolina	Cocklebur	20	Sta.	Crabgrass	90	Sta.	Galinsoga	80	Up	Lambsquarters	30	Sta.	Pigweed	20	Sta.
Oklahoma	Bermudagrass	40	Up	Crabgrass	90	Sta.	Johnsongrass	90	Sta.	Morningglory	20	Up	Pigweed	90	Sta.
South Carolina	Cocklebur	40	Up	Crabgrass	50	Down	Morningglory	20	Sta.	Pigweed	40	Sta.	Ragweed	30	Sta.
Tennessee	Crabgrass	40	Down	Goosegrass	30	Down	Nutsedge	15	Up	Pigweed	30	Sta.	Ragweed	35	Sta.
Texas	Crabgrass	50	Sta.	Purslane, common	30	Sta.	Ragweed, common	20	Sta.	Rocket, London	75	Sta.	Sunflower	50	Sta.
Virginia	Crabgrass	40	Sta.	Lambsquarters	30	Sta.	Morningglory	25	Sta.	Nutsedge	5	Up	Ragweed	30	Sta.
Western:															
California	Barnyardgrass	70	Sta.	Lambsquarters	40	Sta.	Nightshade	20	Up	Pigweed, redroot	40	Sta.	Purslane	20	Sta.
New Mexico	Barnyardgrass	5	Down	Carelessweed	5	Down	Foxtail, green	3	Down	Johnsongrass	12	Sta.	Kochia	10	Up
Oregon	Groundsel	50	Sta.	Mustard	30	Sta.	Nightshade	50	Sta.	Pigweed, redroot	30	Sta.	--	--	--
Utah	Barnyardgrass	50	Sta.	Bindweed, field	20	Up	Lambsquarters, common	50	Sta.	Nightshade	25	Up	Pigweed, redroot	90	Sta.
Washington	Barnyardgrass	80	Up	Lambsquarters	75	Sta.	Nightshade, black	75	Sta.	Pigweed, redroot	75	Sta.	Thistle, Canada	3	Up
Hawaii	Apple-of-Peru	25	Sta.	Mallow, little	15	Down	Nightshade, black	30	Sta.	Nutsedge, purple	35	Up	Tasselflower, red	30	Sta.

1/Sta., stationary.

Table 92.--Greens: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	0.1	---	---	10.00	----	----	100	--
Massachusetts	.3	---	---	12.00	----	----	100	--
New Hampshire	.1	---	---	20.00	----	----	100	--
New Jersey	---	1	---	----	8.00	----	90	10
West Virginia	2/	---	---	20.00	----	----	100	--
Northeastern	.5	1.0	---	13.20	8.00	----	93	7
Ohio	1	---	---	10.00	----	----	100	--
North Central	1.0	---	---	10.00	----	----	100	--
Arkansas	2	---	---	6.00	----	----	100	--
Florida	2	1	1	4.00	3.00	5.00	100	--
Georgia	1	---	---	5.00	----	----	100	--
Kentucky	2/	---	---	9.00	----	----	100	--
Mississippi	1	---	---	10.00	----	----	100	--
North Carolina	.5	---	---	12.00	----	----	100	--
Oklahoma	.5	---	---	7.50	----	----	100	--
Texas	2	---	---	6.00	----	----	90	10
Virginia	1.2	---	---	12.50	----	----	100	--
Southern	10.2	1.0	1.0	7.03	3.00	5.00	98	2
Oregon	.1	---	---	15.00	----	----	100	--
Hawaii	.2	---	---	35.00	----	----	100	--
Western	.3	---	---	28.33	----	----	100	--
United States	12.0	2.0	1.0	8.07	5.50	5.00	98	2

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 93.--Greens: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Poor	---	---	Sta.	Urgent	No	---
Massachusetts	Fair	---	---	Sta.	Some	No	---
New Hampshire	Fair	---	---	Sta.	Some	No	---
New Jersey	---	Good	---	Up	Some	No	---
Northeastern	2-Fair 1-Poor	1-Good	---	1-Up 3-Sta.	1-Urgent 3-Some	4-No	---
Ohio	Fair	---	---	Up	Urgent	No	---
North Central	1-Fair	---	---	1-Up	1-Urgent	1-No	---
Arkansas	Good	---	---	Sta.	Some	No	---
Florida	Poor	Poor	Poor	Up	Urgent	No	---
Georgia	Fair	---	---	Up	Some	No	---
Kentucky	Fair	---	---	Up	Urgent	No	---
Mississippi	Fair	---	---	Sta.	Some	No	---
North Carolina	Fair	---	---	Up	Urgent	No	---
Oklahoma	Fair	---	---	Sta.	Little	No	---
Texas	Good	---	---	Up	Some	No	---
Virginia	Fair	---	---	Up	Some	No	---
Southern	2-Good 6-Fair 1-Poor	1-Poor	1-Poor	6-Up 3-Sta.	3-Urgent 5-Some 1-Little	9-No	---
Oregon	Fair	---	---	Up	Some	No	---
Hawaii	Fair	---	---	Sta.	Urgent	No	---
Western	2-Fair	---	---	1-Up 1-Sta.	1-Urgent 1-Some	2-No	---
United States	2-Good 11-Fair 2-Poor	1-Good 1-Poor	1-Poor	9-Up 7-Sta.	6-Urgent 9-Some 1-Little	16-No	---

1/ Sta., stationary.

Table 94.--Greens: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							100 acres		100 acres		100 acres	100 acres
Barnyardgrass	1	1	--	--	--	1	(1/)	--	---	--	---	(1/)
Bermudagrass	1	--	--	1	--	--	---	1	4	--	---	4
Bittercress	1	--	--	1	--	--	---	1	3	--	---	3
*Bluegrass, annual	3	--	--	1	2	2	52	1	1	--	---	53
Chamomile, corn	1	1	--	--	--	--	---	1	8	--	---	8
*Chickweeds	10	2	--	6	2	9	77	1	2	--	---	79
*Crabgrasses	12	2	2	8	--	8	83	2	5	1	(1/)	88 2/
Crowfootgrass	1	--	--	1	--	1	13	--	---	--	---	13
Dock, curly	1	--	--	1	--	1	1	--	---	--	---	1
*Foxtails	3	1	1	1	--	1	(1/)	2	6	--	---	6
Galinsogas	2	1	--	--	1	--	---	2	(1/)	--	---	(1/)
Garlic, wild	1	--	--	1	--	--	---	1	1	--	---	1
Grasses, annual	2	2	--	--	--	1	12	1	(1/)	--	---	12
Groundsels	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
*Henbit	8	3	--	5	--	5	26	2	2	--	---	59 2/
Johnsongrass	2	--	--	2	--	2	24	--	---	--	---	24
Ladysthumb	1	1	--	--	--	--	---	1	(1/)	--	---	(1/)
*Lambsquarters	9	5	2	1	1	6	33	1	12	1	(1/)	45 2/
Mercury, three-seeded	1	--	1	--	--	--	---	--	---	--	---	(2/)
Morningglories	1	--	--	1	--	--	---	1	(1/)	--	---	(1/)
Mustard, wild	2	2	--	--	--	1	6	1	(1/)	--	---	6
*Nutsedges	4	--	--	3	1	1	(1/)	3	4	--	---	4
Pepperweed	1	--	--	1	--	1	1	--	---	--	---	1
*Pigweeds 3/	9	3	2	4	--	4	43	4	11	--	---	54 2/
*Purslane	6	2	1	3	--	4	40	2	5	--	---	45
Pusley, Florida	2	--	--	2	--	2	(1/)	--	---	--	---	(1/)
Quackgrass	1	1	--	--	--	1	(1/)	--	---	--	---	(1/)
*Ragweeds	5	1	--	4	--	3	5	2	(1/)	--	---	5
Rockets	2	1	--	1	--	2	37	--	---	--	---	37
Sandburs	1	--	--	1	--	1	10	--	---	--	---	10
Shepherdspurse	1	1	--	--	--	--	---	1	6	--	---	6
Sicklepod	1	--	--	1	--	--	---	1	(1/)	--	---	(1/)
Sorrels	1	--	--	1	--	--	---	1	1	--	---	1
Sunflower	1	--	--	1	--	1	37	--	---	--	---	37
Swinecress	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
Tasselflower, red	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
Velvetleaf	1	--	1	--	--	--	---	--	---	--	---	(2/)

1/ U.S. production statistics for kale and spinach do not include acreages for Connecticut, New Hampshire, Alabama, Georgia, Kentucky, North Carolina, South Carolina, Oregon, and Hawaii. Weeds reported in these States are included in frequency counts but acreages are not estimated.

2/ Weeds reported in Kansas and Arkansas not classified by infestation trends; counts and acreage estimates included in regional and total figures.

3/ Includes all amaranths.

Table 95.--Greens: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Galinsoga	15	Up	Grasses, annual	40	Up	Lambquarters	20	Sta.	Pigweed	10	Sta.	Purslane	15	Sta.
Maryland	Chickweed	40	Sta.	Crabgrass	50	Sta.	Henbit	25	Sta.	Lambsquarters	60	Up	Shepherdspurse	30	Up
New Hampshire	Crabgrass	60	Down	Henbit	20	Up	Lambsquarters	60	Down	Quackgrass	20	Sta.	Rocket, yellow	40	Sta.
New Jersey	Chamomile, corn	35	Up	Chickweed	60	Sta.	Grasses, annual	50	Sta.	Henbit	30	Sta.	Mustard, wild	25	Sta.
Pennsylvania	Foxtail, yellow	12	Up	Lambsquarters	25	Sta.	Pigweed, redroot	40	Sta.	Purslane	6	Up	Ragweed	30	Sta.
West Virginia	Barnyardgrass	30	Sta.	Ladysthumb	20	Up	Lambsquarters	30	Sta.	Mustard, wild	50	Up	Pigweed, redroot	25	Up
North Central:															
Kansas	Crabgrass	5	--	Lambsquarters	5	--	Mercury, three-seeded	3	--	Pigweed	10	--	Velvetleaf	1	--
Ohio	Crabgrass	75	Up	Foxtail	50	Up	Lambsquarters	30	Sta.	Pigweed	75	Sta.	Purslane	75	Sta.
Southern:															
Alabama	Crabgrass	100	Sta.	Johnsongrass	40	Sta.	Morninglory	50	Up	Pigweed	50	Up	Ragweed	50	Up
Arkansas	Henbit	100	--	----------	--	--	----------	--	--	----------	--	--	----------	--	--
Florida	Amaranth, sniny	60	Up	Bermudagrass	20	Up	Crabgrass, large	70	Sta.	Crowfootgrass	70	Sta.	Nutsedge, purple	20	Up
Georgia	Chickweed	30	Sta.	Crabgrass	90	Up	Nutsedge	70	Up	Pusley, Florida	40	Sta.	Sicklepod	50	Up
Kentucky	Chickweed	80	Sta.	Crabgrass	100	Sta.	Foxtail	100	Sta.	Henbit	80	Sta.	Ragweed	10	Sta.
Mississippi	Chickweed	40	Sta.	Crabgrass	80	Sta.	Sorrel	60	Up	----------	--	--	----------	--	--
North Carolina	Chickweed	30	Sta.	Henbit	30	Sta.	Ragweed	20	Sta.	----------	--	--	----------	--	--
Oklahoma	Crabgrass	100	Sta.	Johnsongrass	70	Sta.	Lambsquarters	80	Sta.	Pigweed	90	Sta.	Purslane	60	Sta.
South Carolina	Crabgrass	80	Sta.	Nutsedge	30	Up	Pigweed	30	Up	Pusley, Florida	50	Sta.	Ragweed	30	Up
Tennessee	Chickweed	40	Up	Dock, curly	15	Sta.	Garlic, wild	20	Up	Henbit	40	Up	Pepperweed	15	Sta.
Texas	Crabgrass	50	Sta.	Purslane, common	30	Sta.	Rocket, London	75	Sta.	Sandbur	20	Sta.	Sunflower	75	Sta.
Virginia	Bittercress	10	Up	Bluegrass, annual	5	Up	Chickweed	50	Sta.	Henbit	50	Sta.	Purslane	15	Up
Western:															
California	Bluegrass, annual	50	Sta.	Chickweed, common	40	Sta.	----------	--	--	----------	--	--	----------	--	--
Oregon	Bluegrass, annual	60	Sta.	Chickweed	80	Sta.	Groundsel	60	Sta.	----------	--	--	----------	--	--
Hawaii	Galinsoga, smallfl. 2/	60	Up	Lambsquarters, common	40	Sta.	Nutsedge, purple	10	Sta.	Swinecress	40	Up	Tasselflower, red	10	Sta.

1/Sta., stationary.
2/Calinsoga, smallflower.

Table 96.--Salad crops: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	0.8	---	---	10.00	----	----	100	--
Maine	.4	---	---	11.00	----	----	100	--
Massachusetts	1	---	---	12.00	----	----	100	--
New Jersey	2	---	---	12.00	----	----	85	15
West Virginia	2/	---	---	20.00	----	----	100	--
Northeastern	4.2	---	---	11.52	----	----	93	7
Illinois	.1	---	---	5.00	----	----	80	20
Michigan	2	0.5	---	15.00	12.00	----	60	40
Ohio	.5	---	---	10.00	----	----	100	--
Wisconsin	3	---	---	9.00	----	----	100	--
North Central	5.6	.5	---	11.16	12.00	----	83	17
Florida	7	2	11	5.00	4.00	8.00	95	5
Oklahoma	2	---	---	7.00	----	----	100	--
Texas	5	---	---	6.00	----	----	90	10
Virginia	.1	---	---	8.50	----	----	100	--
Southern	14.1	2.0	11.0	5.66	4.00	8.00	94	6
Arizona	20	---	---	12.00	----	----	50	50
California	80	---	---	15.00	----	----	20	80
Oregon	.3	---	---	12.00	----	----	100	--
Hawaii	.6	---	---	35.00	----	----	100	--
Western	100.9	---	---	14.52	----	----	27	73
United States	124.8	2.5	11.0	13.27	5.60	8.00	45	55

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied pesticides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 97.--Salad crops: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Fair	---	---	Sta.	Urgent	No	---
Maine	Poor	---	---	Sta.	Urgent	No	---
Massachusetts	Fair	---	---	Sta.	Some	No	---
New Jersey	Good	---	---	Up	Some	No	---
West Virginia	Fair	---	---	Up	Some	No	---
Northeastern	1-Good 3-Fair 1-Poor	---	---	2-Up 3-Sta.	2-Urgent 3-Some	5-No	---
Illinois	Fair	---	---	Up	Some	No	---
Michigan	Fair	Fair	---	Up	Urgent	No	---
Ohio	Good	---	---	Up	Some	No	---
Wisconsin	Fair	---	---	Sta.	Urgent	No	
North Central	1-Good 3-Fair	1-Fair	---	3-Up 1-Sta.	2-Urgent 2-Some	4-No	---
Florida	Good	Good	Good	Sta.	Little	No	---
Oklahoma	Fair	---	---	Up	Some	No	---
Texas	Good	---	---	Up	Some	Yes	20
Virginia	Fair	---	---	Up	Some	No	---
Southern	2-Good 2-Fair	1-Good	1-Good	3-Up 1-Sta.	3-Some 1-Little	1-Yes 3-No	4
Arizona	Good	---	---	Sta.	Some	Yes	10
California	Good	---	---	Sta.	Some	No	---
Oregon	Fair	---	---	Up	Some	No	---
Hawaii	Fair	---	---	Sta.	Some	No	---
Western	2-Good 2-Fair	---	---	1-Up 3-Sta.	4-Some	1-Yes 3-No	2
United States	6-Good 10-Fair 1-Poor	1-Good	1-Good	9-Up 8-Sta.	4-Urgent 12-Some 1-Little	2-Yes 15-No	2

1/ Sta., stationary.

Table 98.--Salad crops: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area	
		NE	NC	S	W	Stationary		Up		Down			
						No.	Area	No.	Area	No.	Area		
							100 acres		100 acres		100 acres	100 acres	
*Barnyardgrass	5	1	2	--	2	4	28	--	---	--	---	28	2/
Bermudagrass	1	--	--	1	--	--	---	1	44	--	---	44	
Bindweed	1	--	--	--	1	--	--	1	(1/)	--	---	(1/)	
Bittercress	1	--	--	1	--	--	---	1	(1/)	--	---	(1/)	
Chickweeds	4	1	1	2	--	3	19	--	---	1	20	39	
*Crabgrasses	9	2	3	4	--	5	170	2	18	1	(1/)	188	3/
Crowfootgrass	1	--	--	1	--	1	153	--	---	--	---	153	
Dogfennel	1	--	--	--	1	1	2	--	---	--	---	2	
Foxtails	2	1	1	--	--	1	(1/)	1	12	--	---	12	
*Galinsogas	3	2	--	--	1	--	---	3	10	--	---	10	
Grasses, annual	1	1	--	--	--	--	---	--	---	1	1	1	
Groundsels	1	--	--	--	1	1	3	--	---	--	---	3	
*Henbit	4	2	--	2	--	3	19	1	(1/)	--	---	19	
Johnsongrass	1	--	--	1	--	1	(1/)	--	---	--	---	(1/)	
Ladysthumb	1	--	1	--	--	1	17	--	---	--	---	17	
*Lambsquarters	14	5	4	1	4	9	33	1	(1/)	2	21	54	2/3/
Mercury, three-seeded	1	--	1	--	--	--	---	--	---	--	---	(3/)	
*Mustards	3	2	--	--	1	3	3	--	---	--	---	3	
Nettle, stinging	1	--	--	--	1	--	---	--	---	--	---	(2/)	
Nightshades	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)	
*Nutsedges	3	--	--	2	1	2	1	1	44	--	---	45	
Panicum, fall	1	1	--	--	--	--	---	1	(1/)	--	---	(1/)	
*Pigweeds 4/	12	3	3	3	3	8	23	1	131	1	28	182	2/3/
*Purslane	11	3	3	3	2	6	237	3	2	1	26	265	2/
Pusley, Florida	1	--	--	1	--	1	(1/)	--	---	--	---	(1/)	
Quackgrass	1	1	--	--	--	1	(1/)	--	---	--	---	(1/)	
*Ragweeds	4	2	--	2	--	3	12	1	(1/)	--	---	12	
Rockets	2	1	--	1	--	2	46	--	---	--	---	46	
Sandburs	1	--	--	1	--	1	19	--	---	--	---	19	
Shepherdspurse	1	1	--	--	--	--	---	1	8	--	---	8	
Sunflower	1	--	--	1	--	1	46	--	---	--	---	46	
Swinecress	1	--	--	--	1	--	---	1	2	--	---	2	
Tasselflower, red	1	--	--	--	1	1	1	--	---	--	---	1	
Velvetleaf	1	--	1	--	--	--	---	--	---	--	---	(3/)	
Watercress (complex)	1	--	--	--	1	1	136	--	---	--	---	136	

1/ U.S. production statistics for celery, escarole, and lettuce do not include acreages for New Hampshire, West Virginia, Kentucky, Oklahoma, South Carolina, Virginia, and Utah; infestations of less than 50 acres were estimated for some weeds in Pennsylvania. Weeds reported are included in frequency counts, but acreages were not estimated.

2/ Weeds listed by California not classified by extent of infestations or trend.

3/ Weeds reported in Kansas not classified by infestation trend; counts and acreage estimates included in regional and total figures.

4/ Includes all amaranths.

Table 99.--Salad crops: Five most important weeds listed alphabetically by States within regions, acres infested, and infestation trend, 1966

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Galinsoga	15	Up	Grasses, annual	25	Down	Lambsquarters	10	Sta.	Pigweed	5	Sta.	Purslane	15	Sta.
Maine	Barnyardgrass	35	Sta.	Lambsquarters	60	Sta.	Mustard, wild	20	Sta.	Pigweed, redroot	50	Sta.	Purslane	80	Up
New Hampshire	Crabgrass	60	Down	Henbit	20	Up	Lambsquarters	60	Down	Quackgrass	20	Sta.	Rocket, yellow	40	Sta.
New Jersey	Chickweed	35	Sta.	Galinsoga	10	Up	Henbit	35	Sta.	Shepherdspurse	15	Up	----------	--	--
Pennsylvania	Foxtail, yellow	15	Sta.	Lambsquarters	20	Sta.	Pigweed, redroot	25	Sta.	Purslane	5	Up	Ragweed	18	Sta.
West Virginia	Crabgrass	50	Up	Lambsquarters	40	Up	Mustard, wild	30	Sta.	Panicum, fall	20	Up	Ragweed, common	25	Up
North Central:															
Kansas	Crabgrass	5	--	Lambsquarters	5	--	Mercury, three-seeded	5	--	Pigweed	5	--	Velvetleaf	2	--
Michigan	Barnyardgrass	30	Sta.	Chickweed, common	60	Down	Lambsquarters	65	Down	Pigweed, rough	85	Down	Purslane, common	80	Down
Ohio	Crabgrass	75	Up	Foxtail	50	Up	Lambsquarters	40	Sta.	Pigweed	75	Sta.	Purslane	75	Sta.
Wisconsin	Barnyardgrass	100	Sta.	Crabgrass, large	100	Sta.	Ladysthumb	100	Sta.	Lambsquarters, common	100	Sta.	Purslane, common	100	Sta.
Southern:															
Florida	Amaranth, spiny	60	Up	Bermudagrass	20	Up	Crabgrass, large	70	Sta.	Crowfootgrass	70	Sta.	Nutsedge, purple	20	Up
Kentucky	Chickweed	10	Sta.	Henbit	10	Sta.	----------	--	--	----------	--	--	----------	--	--
Oklahoma	Crabgrass	95	Sta.	Johnsongrass	65	Sta.	Lambsquarters	80	Sta.	Pigweed	90	Sta.	Purslane	50	Sta.
South Carolina	Crabgrass	80	Sta.	Nutsedge	30	Sta.	Pigweed	30	Sta.	Pusley, Florida	50	Sta.	Ragweed	30	Sta.
Texas	Purslane, common	30	Sta.	Ragweed, common	20	Sta.	Rocket, London	75	Sta.	Sandbur	30	Sta.	Sunflower	75	Sta.
Virginia	Bittercress	10	Up	Chickweed	50	Sta.	Crabgrass	25	Sta.	Henbit	50	Sta.	Purslane	15	Up
Western:															
Arizona	Purslane	40	Sta.	Watergrass	30	Sta.	----------	--	--	----------	--	--	----------	--	--
California	Barnyardgrass	--	--	Lambsquarters	--	--	Nettle, stinging	--	--	Pigweed, redroot	--	--	Purslane	--	--
Oregon	Dogfennel	30	Sta.	Groundsel	50	Sta.	Lambsquarters	20	Sta.	Mustard	30	Sta.	Pigweed, redroot	30	Sta.
Utah	Barnyardgrass	60	Sta.	Bindweed, field	10	Up	Lambsquarters	50	Sta.	Nightshade	25	Up	Pigweed, redroot	90	Sta.
Hawaii	Galinsoga, smallfl. 2/	60	Up	Lambsquarters, common	40	Sta.	Nutsedge, purple	10	Sta.	Swinecress	40	Up	Tasselflower, red	10	Sta.

1/ Sta., stationary.
2/ Galinsoga, smallflower.

Table 100.--Cole crops: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	---	1.2	---	----	12.00	----	100	--
Maine	2/	---	---	9.00	----	----	100	--
Massachusetts	---	1.0	---	----	14.00	----	100	--
New Hampshire	---	.3	---	----	30.00	----	85	15
New Jersey	1	---	---	6.00	----	----	90	10
West Virginia	2/	---	---	25.00	----	----	100	--
Northeastern	1.0	2.5	---	6.00	14.96	----	96	4
Illinois	2	---	.3	12.00	----	20.00	80	20
Michigan	5	---	---	10.00	----	----	75	25
Ohio	2	1	---	8.00	8.00	----	50	50
Wisconsin	5	---	---	12.00	----	----	60	40
North Central	14.0	1.0	.3	10.71	8.00	20.00	66	34
Alabama	.2	---	---	7.00	----	----	100	--
Arkansas	.2	---	---	6.00	----	----	100	--
Florida	4	2	2	3.00	3.00	5.00	95	5
Georgia	.5	---	---	5.00	----	----	100	--
Kentucky	2/	---	---	10.00	----	----	100	--
Louisiana	.3	---	---	10.00	----	----	98	2
Mississippi	.2	---	---	7.00	----	----	100	--
North Carolina	3	---	---	8.00	----	----	90	10
Oklahoma	.3	---	---	3.50	----	----	100	--
South Carolina	1	---	---	8.00	----	----	100	--
Texas	15	---	---	5.50	----	----	90	10
Virginia	.5	---	---	9.50	----	----	100	--
Southern	25.2	2.0	2.0	5.63	3.00	5.00	92	8
Arizona	2	---	---	10.00	----	----	50	50
California	30	2	---	12.50	8.00	----	20	80
Oregon	3	---	1	12.00	----	20.00	60	40
Utah	.3	---	---	6.00	----	----	10	90
Hawaii	.5	---	---	35.00	----	----	100	--
Western	35.8	2.0	1.0	12.58	8.00	20.00	27	73
United States	76.0	7.5	3.3	9.84	8.99	10.91	59	41

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 101.--Cole crops: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	---	Good	---	Up	Some	No	---
Maine	Good	---	---	Down	Some	No	---
Massachusetts	Fair	Fair	---	Up	Some	No	---
New Hampshire	---	Good	---	Up	Some	No	---
New Jersey	Fair	---	---	Sta.	Urgent	No	---
West Virginia	Fair	---	---	Up	Urgent	No	---
Northeastern	1-Good 3-Fair	2-Good 1-Fair	---	4-Up 1-Sta. 1-Down	2-Urgent 4-Some	6-No	---
Illinois	Fair	---	Fair	Up	Some	No	---
Michigan	Fair	---	---	Up	Some	No	---
Ohio	Good	Good	---	Up	Some	No	---
Wisconsin	Fair	---	---	Sta.	Urgent	No	---
North Central	1-Good 3-Fair	1-Good	1-Fair	3-Up 1-Sta.	1-Urgent 3-Some	4-No	---
Alabama	Fair	---	---	Up	Urgent	No	---
Arkansas	Good	---	---	Sta.	Little	No	---
Florida	Good	Good	Good	Up	Some	No	---
Georgia	Fair	---	---	Up	Some	No	---
Kentucky	Good	---	---	Up	Some	No	---
Louisiana	Good	---	---	Up	Little	No	---
Mississippi	Good	---	---	Sta.	Little	No	---
North Carolina	Fair	---	---	Up	Some	No	---
Oklahoma	Fair	---	---	Up	Some	No	---
South Carolina	Fair	---	---	Up	Some	No	---
Texas	Good	---	---	Up	Some	Yes	10
Virginia	Fair	---	---	Up	Some	No	---
Southern	6-Good 6-Fair	1-Good	1-Good	10-Up 2-Sta.	1-Urgent 8-Some 3-Little	1-Yes 11-No	5
Arizona	Good	---	---	Sta.	Little	Yes	10
California	Good	Good	---	Up	Some	No	---
Oregon	Fair	---	Good	Up	Some	No	---
Utah	Good	---	---	Up	Some	No	---
Hawaii	Fair	---	---	Sta.	Some	No	---
Western	3-Good 2-Fair	1-Good	1-Good	3-Up 2-Sta.	4-Some 1-Little	1-Yes 4-No	1
United States	11-Good 14-Fair	5-Good 1-Fair	2-Good 1-Fair	20-Up 6-Sta. 1-Down	4-Urgent 19-Some 4-Little	2-Yes 25-No	2

1/ Sta., stationary.

Table 102.--Cole crops: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							100 acres		100 acres		100 acres	100 acres
*Barnyardgrass	5	1	2	1	1	3	15	--	---	2	14	29
Bermudagrass	1	--	--	1	--	--	---	1	34	--	---	34
Bindweed, field	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
Bluegrass, annual	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
*Chickweeds	8	--	--	7	1	6	38	1	3	--	---	41 2/
Cocklebur	1	--	--	1	--	--	---	1	3	--	---	3
*Crabgrasses	16	2	2	12	--	11	229	--	---	2	12	241 2/3/
Crowfootgrass	1	--	--	1	--	1	119	--	---	--	---	119
Eveningprimrose	1	--	--	1	--	1	12	--	---	--	---	12
*Foxtails	5	1	3	1	--	3	59	--	---	2	20	79
Galinsogas	3	1	--	1	1	1	(1/)	2	23	--	---	23
Goosegrass	2	1	--	1	--	2	10	--	---	--	---	10
Grasses, annual	2	2	--	--	--	1	24	--	---	1	1	25
Groundsels	1	--	--	--	1	--	---	1	31	--	---	31
Henbit	3	--	--	3	--	3	25	--	---	--	---	25
Johnsongrass	3	--	--	3	--	1	(1/)	1	(1/)	--	---	(3/)
Ladysthumb	1	--	1	--	--	1	57	--	---	--	---	57
*Lambsquarters	17	6	5	3	3	10	139	1	(1/)	5	51	190 3/
Mercury, three-seeded	1	--	1	--	--	--	---	--	---	--	---	(3/)
Morningglories	1	--	--	1	--	1	3	--	---	--	---	3
*Mustards	4	2	--	--	2	2	12	2	(1/)	--	---	12
Nettle, stinging	1	--	--	--	1	--	---	--	---	--	---	(2/)
Nightshades	1	--	--	--	1	--	---	--	---	--	---	(2/)
*Nutsedges	6	1	1	3	1	2	1	3	40	--	---	41 2/
Panicum, fall	1	1	--	--	--	1	(1/)	--	---	--	---	(1/)
Pepperweeds	1	1	--	--	--	1	9	--	---	--	---	9
*Pigweeds 4/	21	6	5	8	2	12	115	2	107	5	85	307 3/
*Purslane	9	1	3	3	2	5	66	--	---	3	73	139 2/
Quackgrass	2	--	1	--	1	2	57	--	---	--	---	57
*Ragweeds	7	2	1	4	--	3	17	2	23	2	11	51
Rockets	2	1	--	1	--	2	110	--	---	--	---	110
Sandburs	1	--	--	1	--	1	44	--	---	--	---	44
Shepherdspurse	1	--	--	--	1	--	---	--	---	--	---	(2/)
Signalgrass	1	--	--	1	--	--	---	1	12	--	---	12
Spurry, corn	1	--	--	--	1	--	---	1	(1/)	--	---	(1/)
Sunflower	1	--	--	1	--	1	110	--	---	--	---	110
Swinecress	1	--	--	--	1	--	---	1	2	--	---	2
Tasselflower, red	1	--	--	--	1	1	1	--	---	--	---	1
Velvetleaf	1	--	1	--	--	--	---	--	---	--	---	(3/)
Watergrass (complex)	1	--	--	--	1	1	26	--	---	--	---	26

1/ U.S. production statistics for cole crops do not include acreages for Maine, West Virginia, Kentucky, Oklahoma, and Utah; infestations of less than 50 acres were estimated for some weeds in Connecticut, New Hampshire, Mississippi, and Alaska. Weeds reported are included in frequency counts, but acreages were not estimated.

2/ Weeds listed by South Carolina and California not classified by extent of infestation or trend.

3/ Weeds reported in Kansas and Arkansas not classified by infestation trend; counts and acreages included in regional and total figures.

4/ Includes all amaranths.

Table 103.--Cole crops: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1963

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Grasses, annual	10	Down	Lambsquarters	10	Down	Pigweed	5	Down	----------	--	--	----------	--	
Maine	Lambsquarters	40	Sta.	Mustard, wild	50	Up	Pigweed, redroot	40	Sta.	----------	--	--	----------	--	
Maryland	Crabgrass	60	Sta.	Goosegrass	30	Sta.	Lambsquarters	60	Sta.	Pigweed	50	Sta.	Ragweed	40	Up
New Hampshire	Barnyardgrass	60	Down	Crabgrass	70	Down	Lambsquarters	50	Down	Nutsedge	10	Sta.	Rocket, yellow	20	Sta.
New Jersey	Grasses, annual	40	Sta.	Pepperweed	15	Sta.	Pigweed	25	Sta.	----------	--	--	----------	--	--
Pennsylvania	Foxtails, yellow	30	Down	Lambsquarters	35	Down	Pigweed, redroot	25	Down	Purslane	9	Sta.	Ragweed	20	Down
West Virginia	Galinsoga	30	Sta.	Lambsquarters	40	Up	Mustard, wild	80	Up	Panicum, Fall	35	Sta.	Pigweed, redroot	20	Sta.
North Central:															
Illinois	Lambsquarters	25	Down	Purslane	20	Down	Ragweed	20	Down	----------	--	--	----------	--	--
Iowa	Barnyardgrass	50	Sta.	Foxtails	50	Sta.	Pigweed, redroot	50	Sta.	----------	--	--	----------	--	--
Kansas	Crabgrass	5	--	Lambsquarters	3	--	Mercury, three-seeded	5	--	Pigweed	5	--	Velvetleaf	1	--
Michigan	Barnyardgrass	30	Down	Lambsquarters	75	Down	Nutsedge	5	Up	Pigweed, rough	85	Down	Purslane, common	90	Down
Ohio	Crabgrass	30	Down	Foxtails	30	Down	Lambsquarters	40	Sta.	Pigweed	75	Down	Purslane	75	Down
Wisconsin	Foxtail, green	100	Sta.	Ladysthumb	100	Sta.	Lambsquarters, common	100	Sta.	Pigweed, redroot	100	Sta.	Quackgrass	100	Sta.
Southern:															
Alabama	Chickweed	20	Sta.	Crabgrass	100	Sta.	Lambsquarters	30	Sta.	Pigweed	40	Sta.	Ragweed	20	Sta.
Arkansas	Crabgrass	100	--	Johnsongrass	100	--	Pigweed	100	--	----------	--	--	----------	--	--
Florida	Amaranth, spiny	60	Up	Bermudagrass	20	Up	Crabgrass, large	70	Sta.	Crowfootgrass	70	Sta.	Nutsedge, purple	20	Up
Georgia	Chickweed	30	Sta.	Crabgrass	20	Sta.	Eveningprimrose	40	Sta.	Henbit	30	Sta.	Morningglory	10	Sta.
Kentucky	Chickweed	50	Sta.	Crabgrass	100	Sta.	Foxtail, giant	100	Sta.	Henbit	50	Sta.	----------	--	--
Louisiana	Chickweed	75	Sta.	Crabgrass	80	Sta.	Henbit	80	Sta.	Pigweed	70	Sta.	Signalgrass	60	Up
Mississippi	Cocklebur	40	Up	Crabgrass	70	Sta.	Johnsongrass	5	Up	Pigweed	75	Up	----------	--	--
North Carolina	Barnyardgrass	20	Sta.	Chickweed	20	Sta.	Crabgrass	70	Sta.	Galinsoga	30	Up	Ragweed	30	Up
Oklahoma	Crabgrass	95	Sta.	Johnsongrass	80	Sta.	Lambsquarters	50	Sta.	Pigweed	90	Sta.	Purslane	40	Sta.
South Carolina	Chickweed	--	--	Crabgrass	--	--	Nutsedge	--	--	----------	--	--	----------	--	--
Tennessee	Crabgrass	90	Sta.	Goosegrass	60	Sta.	Nutsedge	30	Up	Pigweed	60	Sta.	Ragweed	30	Sta.
Texas	Lambsquarters	40	Sta.	Purslane, common	30	Sta.	Rocket, London	75	Sta.	Sandbur	30	Sta.	Sunflower	75	Sta.
Virginia	Chickweed	10	Up	Crabgrass	40	Sta.	Pigweed	40	Sta.	Purslane	20	Sta.	Ragweed	40	Sta.
Western:															
Arizona	Purslane	40	Sta.	Watergrass	80	Sta.	----------	--	--	----------	--	--	----------	--	--
California	Nettle, stinging	--	--	Nightshade, hairy	--	--	Purslane	--	--	Shepherdspurse	--	--	----------	--	--
Oregon	Groundsel	50	Up	Mustard	20	Sta.	Pigweed, redroot	20	Down	----------	--	--	----------	--	--
Utah	Barnyardgrass	80	Sta.	Bindweed, field	10	Up	Lambsquarters	50	Sta.	Mustard, black	90	Sta.	Pigweed, redroot	90	Sta.
Alaska	Bluegrass, annual	30	Up	Chickweed	90	Sta.	Lambsquarters	90	Sta.	Quackgrass	50	Sta.	Spurry, corn	30	Up
Hawaii	Galinsoga, smallflower	60	Up	Lambsquarters, common	40	Sta.	Nutsedge, purple	10	Sta.	Swinecress	40	Up	Tasselflower, red	10	Sta.

1/ Sta., stationary.

Table 104.--Miscellaneous vegetable crops: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Maryland	2	---	---	6.50	----	----	100	--
West Virginia	---	2/	---	----	50.00	----	100	--
Northeastern	2.0	2/	---	6.50	50.00	----	100	--
Kansas	1.2	---	---	6.50	----	----	100	--
North Central	1.2	---	---	6.50	----	----	100	--
Florida	15	4	0.4	3.00	2.00	4.00	95	5
Louisiana	.5	---	---	10.00	----	----	98	2
Oklahoma	.3	---	---	4.50	----	----	100	--
Tennessee	.5	---	---	15.00	----	----	90	10
Southern	16.3	4.0	.4	3.61	2.00	4.00	95	5
United States	19.5	4.0	.4	4.08	2.00	4.00	96	4

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.
2/ Less than 50 acres.

Table 105.--Miscellaneous vegetable crops: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Maryland	Fair	---	---	Up	Some	No	---
West Virginia	---	Poor	---	Up	Some	No	---
Northeastern	1-Fair	1-Poor	---	2-Up	2-Some	2-No	---
Kansas	Fair	---	---	Up	Some	Yes	70
North Central	1-Fair	---	---	1-Up	1-Some	1-Yes	70
Florida	Fair	Fair	Fair	Up	Urgent	No	---
Louisiana	Good	---	---	Up	Little	No	---
Oklahoma	Fair	---	---	Up	Some	No	---
Tennessee	Fair	---	---	Up	Some	No	---
Southern	1-Good 3-Fair	1-Fair	1-Fair	4-Up	1-Urgent 2-Some 1-Little	4-No	---
United States	1-Good 5-Fair	1-Fair 1-Poor	1-Fair	7-Up	1-Urgent 5-Some 1-Little	1-Yes 6-No	3

1/ Sta., stationary.

Table 106.--Miscellaneous vegetable crops: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the five weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No	Area	No.	Area	
							Percent		Percent		Percent	Percent
Barnyardgrass	1	--	--	--	1	1	60	--	---	--	---	60
Bentgrass	1	--	--	--	1	1	40	--	---	--	---	40
Bermudagrass	1	--	--	1	--	--	---	1	20	--	---	20
Bindweed, field	1	1	--	--	--	--	---	1	20	--	---	20
Bluegrass, annual	1	--	--	--	1	1	50	--	---	--	---	50
Chickweeds	1	--	--	--	1	1	50	--	---	--	---	50
Cockleburs	2	--	--	2	--	2	52	--	---	--	---	52
*Crabgrasses	9	--	1	8	--	6	87	1	95	1	90	80 2/
Crowfootgrass	1	--	--	1	--	1	70	--	---	--	---	70
Foxtails	1	--	--	1	--	1	100	--	---	--	---	100
Goosegrass	1	--	--	1	--	--	---	--	---	1	60	60
Groundsels	1	--	--	--	1	1	30	--	---	--	---	30
*Johnsongrass	3	--	--	3	--	3	55	--	---	--	---	55
*Lambsquarters	4	--	1	2	1	3	63	--	---	--	---	49 2/
Mercury, three-seeded	1	--	1	--	--	--	---	--	---	--	---	2 2/
Mustards	2	1	--	--	1	2	55	--	---	--	---	55
*Nutsedges	3	1	--	2	--	1	40	2	18	--	---	25
*Pigweeds 3/	8	--	1	6	1	5	71	2	50	--	---	58 2/
Purslane	1	--	--	1	--	1	55	--	---	--	---	55
Pusley, Florida	1	--	--	1	--	1	50	--	---	--	---	50
Quackgrass	2	1	--	--	1	--	---	2	35	--	---	35
Ragweeds	1	--	--	1	--	1	40	--	---	--	---	40
Ryegrass	1	--	--	--	1	1	50	--	---	--	---	50
Sida, prickly	1	--	--	1	--	--	---	1	25	--	---	25
Signalgrass	1	--	--	1	--	--	---	1	60	--	---	60
Sorrel, red	1	1	--	--	--	--	---	1	30	--	---	30
Teaweed	1	--	--	1	--	--	---	1	50	--	---	50
Velvetleaf	1	--	1	--	--	--	---	--	---	--	---	5 2/

1/ Of reporting States, production acreages were available for peppermint in Oregon. Figures in Area columns are averages of percentage estimates given in the reports.
2/ Weeds reported in Kansas not classified by trends, but area estimates included in overall averages.
3/ Includes all amaranths.

Table 107.--Miscellaneous vegetable crops: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1964

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
West Virginia---	Bindweed, field------	20	Up	Mustard, wild-------	20	Sta.	Nutsedge----------	40	Sta.	Quackgrass----------	60	Up	Sorrel, red---------	30	Up
North Central:															
Kansas----------	Crabgrass----------	15	---	Lambsquarters-------	5	---	Mercury, three-seeded	5	---	Pigweed----------	10	---	Velvetleaf----------	2	---
Southern:															
Alabama---------	Cocklebur----------	30	Sta.	Crabgrass----------	100	Sta.	Johnsongrass--------	40	Sta.	Pigweed----------	50	Sta.	Pusley, Florida-----	50	Sta.
Florida---------	Amaranth, spiny------	60	Up	Bermudagrass--------	20	Up	Crabgrass, large----	70	Sta.	Crowfootgrass-------	70	Sta.	Nutsedge, purple----	20	Up
Kentucky--------	Crabgrass----------	100	Sta.	Foxtail, giant------	100	Sta.	----------	--	---	----------	--	---	----------	--	---
Louisiana-------	Crabgrass----------	80	Sta.	Johnsongrass--------	45	Sta.	Pigweed----------	65	Sta.	Signalgrass---------	60	Up	Teaweed----------	50	Up
Mississippi-----	Cocklebur----------	75	Sta.	Crabgrass----------	95	Up	Nutsedge----------	15	Up	Pigweed----------	40	Up	Sida, prickly-------	25	Up
North Carolina--	Crabgrass----------	75	Sta.	----------	--	---	----------	--	---	----------	--	---	----------	--	---
Oklahoma--------	Crabgrass----------	95	Sta.	Johnsongrass--------	80	Sta.	Lambsquarters-------	80	Sta.	Pigweed----------	90	Sta.	Purslane----------	55	Sta.
Tennessee-------	Crabgrass----------	90	Down	Goosegrass----------	60	Down	Lambsquarters-------	60	Sta.	Pigweed----------	60	Sta.	Ragweed----------	40	Sta.
Western:															
Oregon----------	Bentgrass----------	40	Sta.	Bluegrass, annual---	50	Sta.	Chickweed----------	50	Sta.	Groundsel----------	30	Sta.	Ryegrass----------	50	Sta.
Utah----------	Barnyardgrass--------	60	Sta.	Lambsquarters-------	50	Sta.	Mustard, black------	90	Sta.	Pigweed, redroot----	90	Sta.	Quackgrass----------	10	Up

1/Sta., stationary.

Table 108.--All vegetable seed crops: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Mississippi	1	---	---	7.00	----	----	100	--
Southern	1	---	---	7.00	----	----	100	--
Idaho	1	1	---	13.00	20.00	----	100	--
Oregon	2	---	---	15.00	----	----	80	20
Hawaii	2/	---	2/	25.00	----	50.00	100	--
Western	3	1	2/	14.33	20.00	50.00	90	10
United States	4	1	2/	12.50	20.00	50.00	92	8

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 109.--All vegetable seed crops: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic reigons, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Mississippi	Fair	---	---	Sta.	Some	No	---
Southern	1-Fair	---	---	1-Sta.	1-Some	1-No	---
Idaho	Good	Good	---	Up	Some	No	---
Oregon	Fair	---	---	Up	Some	No	---
Hawaii	Fair	---	Good	Up	Urgent	No	---
Western	1-Good 2-Fair	1-Good	1-Good	3-Up	1-Urgent 2-Some	3-No	---
United States	1-Good 3-Fair	1-Good	1-Good	3-Up 1-Sta.	1-Urgent 3-Some	4-No	---

1/ Sta., stationary.

Table 110.--All vegetable seed crops: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							Percent		Percent		Percent	Percent
Barnyardgrass	3	--	--	--	3	2	30	1	60	--	---	40
Bermudagrass	1	--	--	--	1	--	---	1	20	--	---	20
Buckwheat, wild	1	--	--	--	1	1	100	--	---	--	---	100
Chickweeds	1	--	--	--	1	1	100	--	---	--	---	100
Cockleburs	1	--	--	1	--	1	75	--	---	--	---	75
Foxtail, bristly	1	--	--	--	1	1	40	--	---	--	---	40
Groundsels	1	--	--	--	1	1	30	--	---	--	---	30
Guineagrasses	1	--	--	--	1	1	20	--	---	--	---	20
Knotweed, prostrate	2	--	--	--	2	1	100	1	25	--	---	62
Ladysthumb	1	--	--	--	1	1	100	--	---	--	---	100
Lambsquarters	3	--	--	--	3	3	67	--	---	--	---	67
Morningglories	1	--	--	1	--	--	---	--	---	1	10	10
Mustard, black	1	--	--	--	1	1	90	--	---	--	---	90
Nightshades	1	--	--	--	1	--	---	1	30	--	---	30
Panicums	1	--	--	--	1	--	---	1	50	--	---	50
Pigweeds	4	--	--	1	3	3	60	1	75	--	---	64
Purslane	1	--	--	--	1	1	30	--	---	--	---	30
Rhodesgrass	1	--	--	--	1	1	20	--	---	--	---	20
Sida, prickly	1	--	--	1	--	--	---	1	60	--	---	60
Signalgrass	1	--	--	1	--	1	15	--	---	--	---	15

1/ Commericial operations; State acreages not available. Figures in Area columns are averages of percentage estimates reported.

Table III.--All vegetable seed crops: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Southern:															
Mississippi-----	Cocklebur----------	75	Sta.	Morningglory--------	10	Down	Pigweed------------	75	Up	Sida, prickly-------	60	Up	Signalgrass---------	15	Sta.
Western:															
California------	Barnyardgrass-------	30	Sta.	Knotweed, prostrate-	25	Up	Pigweed, redroot----	40	Sta.	Purslane-----------	30	Sta.	-------------------	--	--
Oregon----------	Barnyardgrass-------	30	Sta.	Groundsel----------	30	Sta.	Lambsquarters-------	40	Sta.	Pigweed, redroot----	50	Sta.	-------------------	--	--
Utah------------	Barnyardgrass-------	60	Up	Lambsquarters-------	60	Sta.	Mustard, black------	90	Sta.	Nightshade----------	30	Up	Pigweed, redroot----	90	Sta.
Washington------	Buckwheat, wild-----	100	Sta.	Chickweed----------	100	Sta.	Knotweed, prostrate-	100	Sta.	Ladysthumb----------	100	Sta.	Lambsquarters-------	100	Sta.
Hawaii----------	Bermudagrass--------	20	Up	Foxtail, bristly----	40	Sta.	Guineagrasses-------	20	Sta.	Panicum------------	50	Up	Rhodesgrass---------	20	Sta.

1/ Sta., stationary.

HORTICULTURAL CROPS--FRUITS AND NUTS

(See General Limitations)

Fruit and nut crops include citrus fruits, pome fruits, stone fruits, tropical and subtropical fruits and nuts, deciduous tree nuts, and small fruits, such as cane fruits, blueberries, strawberries, and cranberries.

Fruit and nut crops are exclusively perennial in habit, and as a result, their weed problems are specialized in character. For example, perennial weeds are particularly common and constitute a severe problem. When the only available weed control methods with these crops are mowing and limited cultivation, annual and perennial weeds become unmanageable. Therefore, herbicides have been a great boon to growers.[11] During 1968, approximately 96 percent of the acreage of fruit and nut crops was treated with herbicides. Data on the extent, cost, and use of herbicides in fruit and nut crops, as well as data on related weed problems, are summarized in tables 1 through 7 and in tables 112 through 129.

The 10 weeds that were reported most frequently in fruit and nut crops (in order of decreasing frequency) were: quackgrass, crabgrasses, pigweeds, johnsongrass, bermudagrass, bindweed, poison ivy, chickweeds, barnyardgrass, and lambsquarters.

Tables for the individual fruit and nut crops are grouped at the end of the discussions (see pages 133 through 148).

Citrus Fruits

Approximately 1 million acres of citrus fruits, including oranges, grapefruit, lemons, limes, tangerines, and tangelos, were grown during 1968. Approximately 768,000 acres, or about 77 percent of the total acreage, were treated with herbicides. The total cost of herbicides and applications was $10.2 million. Preemergence treatments were applied on 63 percent of this acreage; postemergence treatments on 20 percent; and combination treatments on 17 percent (tables 112, 113, and 114).

Pome Fruits

Approximately 1.4 million acres of pome fruit plantings, including apples and pears, were treated with herbicides during 1968. The total cost of herbicides and applications was $9 million. Preemergence treatments were applied on 91 percent of this acreage; postemergence treatments on 7 percent; and combination treatments on 2 percent (tables 115, 116, and 117).

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[11] Preemergence and postemergence as used in discussions of weed problems in these perennial crops refer to the emergence of weeds.

Stone Fruits

During 1968, approximately 333,300 acres of stone fruit plantings, including apricots, cherries, peaches, plums, and prunes, were treated with herbicides. The total cost of herbicides and applications was $4 million. Preemergence treatments were applied on 41 percent of this acreage; postemergence treatments on 33 percent; and combination treatments on 26 percent (tables 118, 119, and 120).

Tropical And Subtropical Fruits And Nuts

Approximately 57,000 acres of tropical and subtropical fruit and nut plantings were treated with herbicides during 1968. The total cost of herbicides and applications was $1.3 million. Preemergence treatments were applied on 72 percent of this acreage; postemergence treatments on 23 percent; and combination treatments on 5 percent (tables 121, 122, and 123).

Deciduous Tree Nuts

During 1968, approximately 244,000 acres of deciduous tree nut plantings, including almonds, filberts, pecans, and walnuts, were treated with herbicides. The total cost of herbicides and applications was $3.2 million. Preemergence treatments were applied on 60 percent of this acreage; postemergence treatments on 27 percent; and combination treatments on 13 percent (tables 124, 125, and 126).

Small Fruits

Approximately 124,200 acres of small fruit plantings, including blueberries, cranberries, cane fruit, and grapes, were treated with herbicides during 1968. The cost of herbicides and applications was $2.1 million. Preemergence treatments were applied on 56 percent of this acreage; postemergence treatments on 32 percent; and combination treatments on 12 percent (tables 127, 128, and 129).

Table 112.--Citrus fruits: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Florida	225	50	25	20.00	10.00	30.00	40	60
Louisiana	1	---	---	12.00	----	----	98	2
Texas	50	60	20	6.00	3.00	9.00	90	10
Southern	276	110	45	17.45	6.18	20.67	55	45
Arizona	5	10	---	8.00	10.00	-----	80	20
California	200	32	90	9.00	8.00	17.00	80	20
Hawaii	---	2/	---	----	15.00	----	100	--
Western	205	42	90	8.98	8.49	17.00	80	20
United States	481	152	135	13.84	6.82	18.22	66	34

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.
2/ Less than 500 acres.

Table 113.--Citrus fruits: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Florida	Good	Fair	Good	Up	Some	No	---
Louisiana	Good	---	---	Up	Little	No	---
Texas	Good	Fair	Good	Up	Some	No	---
Southern	3-Good	2-Fair	2-Good	3-Up	2-Some 1-Little	3-No	---
Arizona	Good	Fair	---	Up	Urgent	No	---
California	Good	Fair	Good	Sta.	Some	No	---
Hawaii	---	Good	---	Sta.	Little	No	---
Western	2-Good	1-Good 2-Fair	1-Good	1-Up 2-Sta.	1-Urgent 1-Some 1-Little	3-No	---
United States	5-Good	1-Good 4-Fair	3-Good	4-Up 2-Sta.	1-Urgent 3-Some 2-Little	6-No	---

1/ Sta., stationary.

Table 71h.--Citrus fruits: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Southern:															
Florida	Balsamapple, pear	--	Up	Guineagrass	--	Sta.	Milkvine	--	Up	Paragrass	--	Sta.	Rosarypea	--	Up
Louisiana	Bermudagrass	80	Sta.	Crabgrass	85	Sta.	Johnsongrass	85	Up	Nutsedge	75	Up	Pigweed	80	Sta.
Texas	Johnsongrass	25	Sta.	Nightshade, silv. 2/	20	Up	Nutsedge	25	Sta.	Pigweed	95	Down	Sunflower	95	Down
Western:															
Arizona	Bermudagrass	35	Up	Johnsongrass	10	Sta.	Rocket, London	70	Sta.	Sandbur	20	Sta.	Watergrass	50	Sta.
California	Barnyardgrass	20	Sta.	Bermudagrass	30	Up	Bindweed	40	Sta.	Nutsedge	30	Up	Spurge, prostrate	20	Up
Hawaii	Bermudagrass	10	Sta.	Foxtail, bristly	20	Sta.	Junglerice	15	Sta.	Nutsedge, purple	50	Sta.	Paspalum	15	Sta.

1/Sta., stationary.
2/Nightshade, silverleaf.

Table 115.--Pome fruits: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	2/	2/	2/	15.00	20.00	30.00	100	--
Delaware	---	---	0.5	----	----	5.00	100	--
Maryland	55	---	---	7.00	----	----	100	--
Massachusetts	0.5	0.5	---	15.00	15.00	----	100	--
New Hampshire	---	2	---	----	15.00	----	100	--
Vermont	---	4	---	----	10.00	----	100	--
West Virginia	5	10	---	15.00	20.00	----	100	--
Northeastern	60.5	16.5	.5	7.73	16.82	5.00	100	--
Illinois	---	1	5	----	3.40	4.80	100	--
Indiana	5	2	5	20.00	12.00	32.00	100	--
Iowa	---	.5	.5	----	1.50	1.50	100	--
Kansas	2/	1.0	---	12.00	8.00	----	95	5
Michigan	---	50	---	----	15.00	----	85	15
Minnesota	3	---	2	10.00	----	15.00	90	10
Wisconsin	---	3.3	---	----	10.00	----	100	--
North Central	8.0	58.0	12.5	16.25	14.15	17.18	90	10
Alabama	---	.2	.1	----	10.00	12.00	100	--
Arkansas	.1	---	---	6.00	----	----	100	--
Georgia	1	1	.5	10.00	10.00	15.00	100	--
Kentucky	---	.8	---	----	7.50	----	100	--
North Carolina	2	1	---	15.00	10.00	----	90	10
Oklahoma	1,200	---	---	5.50	----	----	95	5
Tennessee	---	.1	---	----	15.00	----	95	5
Texas	1	---	---	6.50	----	----	100	--
Virginia	---	6	---	----	4.50	----	100	--
Southern	1,204.1	9.1	.6	5.52	6.21	14.50	95	5
California	10	3	5	9.00	14.00	23.00	85	15
Idaho	---	.1	---	----	3.00	----	100	--
Oregon	6	4	---	10.00	6.00	----	80	20
Utah	.9	.3	---	5.00	6.00	----	80	20
Washington	---	15	---	----	20.00	----	90	10
Western	16.9	22.4	5.0	9.14	1.64	23.00	85	15
United States	1,289.5	106.0	18.6	5.74	11.24	18.33	95	5

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 116.--Pome fruits: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Fair	Fair	Fair	Sta.	Some	No	---
Delaware	---	---	Good	Up	Some	Yes	10
Maryland	Good	---	---	Sta.	Some	No	---
Massachusetts	Fair	Fair	Fair	Up	Urgent	Yes	---
New Hampshire	---	Good	---	Up	Little	No	---
Vermont	---	Good	---	Up	Some	No	---
West Virginia	Good	Fair	---	Up	Urgent	No	---
Northeastern	2-Good 2-Fair	2-Good 3-Fair	1-Good 2-Fair	5-Up 2-Sta.	2-Urgent 4-Some 1-Little	2-Yes 5-No	---
Illinois	---	Good	Good	Up	Urgent	No	---
Indiana	Good	Fair	Good	Up	Urgent	No	---
Iowa	---	Good	Good	Sta.	Some	No	---
Kansas	Fair	Good	---	Up	Some	No	---
Michigan	---	Good	---	Up	Some	No	---
Minnesota	Good	---	Good	Up	Some	No	---
Wisconsin	---	Good	---	Sta.	Little	No	---
North Central	2-Good 1-Fair	5-Good 1-Fair	4-Good	5-Up 2-Sta.	2-Urgent 4-Some 1-Little	7-No	---
Alabama	---	Good	Good	Up	Some	No	---
Arkansas	Good	---	---	Up	Little	No	---
Georgia	Good	Good	Good	Up	Some	No	---
Kentucky	---	Fair	---	Up	Some	No	---
North Carolina	Good	Good	---	Up	Some	No	---
Oklahoma	Good	---	---	Up	Little	No	---
Tennessee	---	Fair	---	Up	Some	No	---
Texas	Good	---	---	Up	Some	Yes	10
Virginia	---	Good	---	Up	Some	No	---
Southern	5-Good	4-Good 2-Fair	2-Good	9-Up	7-Some 2-Little	1-Yes 8-No	---
California	Good	Fair	Good	Up	Some	No	---
Idaho	---	Good	---	Up	Little	No	---
Oregon	Good	Fair	---	Up	Some	No	---
Utah	Good	Good	---	Up	Some	No	---
Washington	---	Good	---	Up	Some	Yes	10
Western	3-Good	3-Good 2-Fair	1-Good	5-Up	4-Some 1-Little	1-Yes 4-No	3
United States	12-Good 3-Fair	14-Good 8-Fair	8-Good 2-Fair	24-Up 4-Sta.	4-Urgent 19-Some 5-Little	4-Yes 24-No	---

1/ Sta., stationary.

Table 117.--Pome fruits: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1964

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Dandelion	--	Sta.	Ivy, poison	--	Sta.	Morningglory	--	Up	Quackgrass	--	Sta.	Ragweed	--	Sta.
Maryland	Dewberries	5	Up	Dogbane, hemp	25	Up	Horsenettle	40	Up	Ivy, poison	20	Sta.	Quackgrass	20	Sta.
New Hampshire	Ivy, poison	30	Down	Milkweed	10	Down	Nutsedge	20	Down	Orchardgrass	40	Down	Quackgrass	90	Down
New Jersey	Brome, downy	30	Sta.	Creeper, Virginia	30	Sta.	Dandelion	75	Up	Dock, Curly	65	Up	Ivy, poison	60	Sta.
Pennsylvania	Foxtail, yellow	30	Down	Lambsquarters	30	Down	Pigweed, redroot	35	Down	Quackgrass	15	Down	Ragweed	15	Down
Vermont	Burdock	10	Sta.	Dandelion	50	Up	Lambsquarters	20	Sta.	Pigweed, redroot	20	Sta.	Quackgrass	80	Sta.
West Virginia	Bindweed, field	5	Up	Brambles	30	Up	Horsenettle	50	Up	Ivy, poison	40	Sta.	Milkweed, common	35	Up
North Central:															
Illinois	Bindweed, field	5	Up	Bindweed, hedge	5	Up	Foxtail, giant	40	Up	Milkweed, climbing	30	Up	----------	--	--
Indiana	Bindweed	30	Up	Ivy, poison	20	Sta.	Milkweed	20	Up	Morningglory	20	Up	Orchardgrass	40	Sta.
Iowa	Foxtails	8	Sta.	Ivy, poison	2	Sta.	Nettle, stinging	1	Sta.	Sandbur	15	Sta.	----------	--	--
Kansas	Bindweed	15	Down	Crabgrass	25	Down	Ivy, poison	5	Sta.	Johnsongrass	10	Sta.	Milkweed, climbing	2	Up
Michigan	Bindweed, field	5	Up	Ivy, poison	5	Up	Milkweed, common	10	Up	Quackgrass	70	Down	Thistle, Canada	5	Up
Minnesota	Bluegrass	100	Sta.	Ivy, poison	5	Sta.	Quackgrass	100	Down	Sowthistle, perennial	2	Sta.	Thistle, Canada	10	Sta.
Ohio	Grasses, perennial	40	Down	Ivy, poison	30	Up	Plantain	30	Up	Quackgrass	20	Down	Thistle, Canada	30	Sta.
Wisconsin	Dandelion, common	100	Up	Ivy, poison	30	Up	Nightshade, black	75	Sta.	Quackgrass	100	Sta.	Thistle, Canada	40	Sta.
Southern:															
Alabama	Bermudagrass	80	Sta.	Crabgrass	75	Sta.	Johnsongrass	40	Sta.	Lambsquarters	20	Sta.	Pigweed	50	Sta.
Arkansas	Bermudagrass	30	--	Crabgrass	100	--	Johnsongrass	40	--	Nutsedge	30	--	----------	--	--
Georgia	Bermudagrass	75	Up	Bramhles	30	Up	Crabgrass	90	Sta.	Johnsongrass	50	Up	Ragweed	80	Up
Kentucky	Bindweed	--	--	Bromegrasses, weedy	--	--	Crabgrass	--	--	Foxtail	--	--	Pigweed	--	--
North Carolina	Brambles	15	Up	Fescue	60	Down	Ivy, poison	10	Up	Orchardgrass	40	Down	Quackgrass	10	Sta.
Oklahoma	Bermudagrass	50	Up	Crabgrass	90	Sta.	Johnsongrass	80	Sta.	Pigweed	85	Sta.	Sandbur	25	Up
Tennessee	Broomsedge	50	Up	Crabgrass	85	Sta.	Fleabane	60	Up	Horseweed	40	Sta.	Ragweed	40	Sta.
Texas	Bermudagrass	10	Sta.	Crabgrass	60	Down	Johnsongrass	60	Sta.	Pigweed	90	Down	Sandbur	60	Down
Virginia	Greenbriers	5	Up	Honeysuckle	5	Sta.	Horsenettle	10	Up	Ivy, poison	10	Sta.	Quackgrass	2	Sta.
Western:															
California	Barnyardgrass	40	Up	Bermudagrass	20	Sta.	Bindweed	30	Up	Johnsongrass	20	Down	Nutsedge	20	Sta.
Idaho	Bindweed, field	40	Sta.	Goldenrod	20	Sta.	Ivy, poison	50	Sta.	Quackgrass	20	Sta.	Sandbur	10	Sta.
New Mexico	Barnyardgrass	35	Sta.	Carelessweed	25	Sta.	Foxtail, green	30	Sta.	Kochia	35	Sta.	Lambsquarters	30	Sta.
Oregon	Barnyardgrass	20	Sta.	Bindweed, field	20	Sta.	Horsetail	10	Down	Quackgrass	40	Down	Ryegrass	50	Sta.
Utah	Bindweed, field	20	Up	Cocklebur	30	Up	Pigweed, redroot	90	Sta.	Punctruevine	30	Up	Quackgrass	25	Up
Washington	Cocklebur	20	Sta.	Dandelions	40	Up	Quackgrass	60	Up	Ragweed	20	Sta.	Thistle, Canada	10	Up

1/Sta., stationary.

Table 118.--Stone fruits: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	---	2/	---	----	10.00	----	100	--
Delaware	2/	2/	0.1	5.00	5.00	10.00	100	--
Maryland	2.3	---	---	8.00	----	----	100	--
Massachusetts	.1	---	---	15.00	----	----	100	--
New Hampshire	---	0.2	---	----	15.00	----	100	--
West Virginia	1	1	---	15.00	20.00	----	100	--
Northeastern	3.4	1.2	.1	10.26	19.17	10.00	100	--
Illinois	---	.5	1	----	3.40	4.80	100	--
Indiana	.7	.3	.7	20.00	12.00	32.00	100	--
Kansas	2/	.8	---	12.00	8.00	----	95	5
Michigan	---	40	---	----	12.00	----	85	15
Wisconsin	---	.8	---	----	10.00	----	100	--
North Central	.7	42.4	1.7	20.00	11.79	16.00	87	13
Alabama	---	.1	.4	----	10.00	12.00	100	--
Arkansas	.1	---	---	6.00	----	----	100	--
Georgia	4	1	---	15.00	15.00	----	100	--
Kentucky	---	.8	---	----	7.50	----	100	--
Louisiana	.3	---	---	7.00	----	----	99	1
Mississippi	.2	.2	---	7.00	5.00	----	100	--
North Carolina	2	.2	---	15.00	10.00	----	90	10
Oklahoma	.7	---	---	5.00	----	----	98	2
South Carolina	---	25	---	----	12.00	----	100	--
Tennessee	---	.1	---	----	15.00	----	95	5
Texas	10	---	---	6.50	----	----	100	--
Virginia	---	1.2	---	----	4.50	----	100	--
Southern	17.3	28.6	.4	9.40	11.60	12.00	99	1
California	110	30	84	9.00	14.00	16.00	90	10
Idaho	---	.1	---	----	3.00	----	100	--
Oregon	5	2	---	10.00	10.00	----	100	--
Utah	1	.4	---	5.00	6.00	----	80	20
Washington	---	5	---	----	20.00	----	90	10
Western	116.0	37.5	84.0	9.01	14.47	16.00	90	10
United States	137.4	109.7	86.2	9.15	12.74	15.97	91	9

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 119.--Stone fruits: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	---	Fair	---	Sta.	Some	No	---
Delaware	Good	Good	Good	Up	Some	Yes	20
Maryland	Good	---	---	Sta.	Some	No	---
Massachusetts	Fair	Fair	---	Up	Some	Yes	---
New Hampshire	---	Good	---	Up	Little	No	---
West Virginia	Good	Good	---	Up	Some	No	---
Northeastern	3-Good 1-Fair	3-Good 2-Fair	1-Good	4-Up 2-Sta.	5-Some 1-Little	2-Yes 4-No	---
Illinois	---	Good	Good	Up	Urgent	No	---
Indiana	Good	Good	Good	Up	Urgent	No	---
Kansas	Fair	Good	---	Up	Some	No	---
Michigan	---	Fair	---	Up	Urgent	No	---
Wisconsin	---	Good	---	Sta.	Little	No	---
North Central	1-Good 1-Fair	4-Good 1-Fair	2-Good	4-Up 1-Sta.	3-Urgent 1-Some 1-Little	5-No	---
Alabama	---	Good	Good	Up	Some	No	---
Arkansas	Good	---	---	Up	Little	No	---
Georgia	Good	Good	---	Up	Some	No	---
Kentucky	---	Fair	---	Up	Some	No	---
Louisiana	Good	---	---	Up	Little	No	---
Mississippi	Fair	Good	---	Up	Some	No	---
North Carolina	Good	Good	---	Up	Some	No	---
Oklahoma	Good	---	---	Up	Little	No	---
South Carolina	---	Good	---	Up	Some	No	---
Tennessee	---	Fair	---	Up	Some	No	---
Texas	Good	---	---	Up	Some	Yes	10
Virginia	---	Good	---	Up	Some	No	---
Southern	6-Good 1-Fair	6-Good 2-Fair	1-Good	12-Up	9-Some 3-Little	1-Yes 11-No	2
California	Good	Fair	Good	Up	Urgent	No	---
Idaho	---	Good	---	Up	Little	No	---
Oregon	Good	Fair	---	Up	Some	No	---
Utah	Good	Good	---	Up	Some	No	---
Washington	---	Good	---	Up	Some	Yes	10
Western	3-Good	3-Good 2-Fair	1-Good	5-Up	1-Urgent 3-Some 1-Little	1-Yes 4-No	---
United States	13-Good 3-Fair	16-Good 7-Fair	5-Good	25-Up 3-Sta.	4-Urgent 18-Some 6-Little	4-Yes 24-No	---

1/ Sta., stationary.

Table 120.--Stone fruits: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, [illegible]

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Chickweed	--	Sta.	Pigweed	--	Sta.	Ragweed	--	Sta.	----------	--	--	----------	--	--
Maryland	Dewberries	5	Up	Dogbane, hemp	25	Up	Horsenettle	40	Up	Ivy, poison	20	Sta.	Quackgrass	20	Sta.
New Hampshire	Ivy, poison	30	Down	Milkweed	10	Down	Nutsedge	20	Down	Orchardgrass	40	Down	Quackgrass	90	Down
New Jersey	Barnyardgrass	15	Sta.	Chickweed	60	Sta.	Dock, curly	40	Up	Foxtail	15	Sta.	Lambsquarters	20	Sta.
Pennsylvania	Foxtail, yellow	15	Down	Lambsquarters	22	Down	Pigweed, redroot	25	Down	Quackgrass	20	Down	Ragweed	15	Down
West Virginia	Bindweed, field	20	Up	Horsenettle	30	Up	Nutsedge	15	Sta.	Orchardgrass	30	Up	Quackgrass	20	Up
North Central:															
Illinois	Bindweed, field	5	Sta.	Bindweed, hedge	5	Sta.	Foxtail, giant	40	Up	Milkweed, climbing	20	Up	----------	--	--
Indiana	Bindweed	30	Up	Ivy, poison	20	Sta.	Milkweed	20	Up	Morningglory	20	Up	Orchardgrass	40	Sta.
Kansas	Bindweed	10	Down	Crabgrass	20	Down	Milkweed, climbing	2	Up	Morningglory	5	Sta.	Sandbur	40	Down
Michigan	Bindweed, field	5	Up	Ivy, poison	5	Up	Milkweed, common	5	Up	Quackgrass	85	Down	Thistle, Canada	5	Up
Minnesota	Bluegrass	100	Sta.	Ivy, poison	5	Sta.	Quackgrass	100	Down	Sowthistle, perennial	2	Sta.	Thistle, Canada	10	Sta.
Ohio	Bindweed	20	Up	Plantains	25	Up	Quackgrass	15	Down	Thistle, Canada	20	Sta.	----------	--	--
Wisconsin	Dandelion, common	100	Up	Ivy, poison	30	Up	Nightshade, black	75	Sta.	Quackgrass	100	Sta.	Thistle, Canada	40	Sta.
Southern:															
Alabama	Bermudagrass	50	Sta.	Cocklebur	15	Sta.	Crabgrass	40	Sta.	Lambsquarters	20	Sta.	Pigweed	35	Sta.
Arkansas	Bermudagrass	30	--	Crabgrass	100	--	Johnsongrass	40	--	Nutsedge	30	--	----------	--	--
Georgia	Bermudagrass	75	Up	Crabgrass	90	Sta.	Johngrass	50	Up	Nutsedge	30	Up	Ragweed	50	Sta.
Kentucky	Bindweed	--	--	Bromegrasses, weedy	--	--	Crabgrass	--	--	Foxtail	--	--	Pigweed	--	--
Louisiana	Bermudagrass	65	Sta.	Crabgrass	90	Sta.	Johnsongrass	50	Up	Nutsedge	80	Up	Pigweed	75	Sta.
Mississippi	Crabgrass	75	Sta.	Dallisgrass	20	Down	Johnsongrass	45	Up	----------	--	--	----------	--	--
North Carolina	Aster, white heath	5	Up	Bermudagrass	50	Up	Camphorweed	5	Up	Crabgrass	100	Down	Ragweed	20	Sta.
Oklahoma	Bermudagrass	60	Up	Crabgrass	100	Sta.	Johnsongrass	90	Sta.	Lambsquarters	60	Sta.	Pigweed	90	Sta.
South Carolina	Bermudagrass	40	Sta.	Crabgrass	40	Sta.	Horsenettle	20	Sta.	Johnsongrass	30	Sta.	Trumpetcreeper	20	Sta.
Tennessee	Broomsedge	50	Up	Crabgrass	85	Sta.	Fleabane	60	Up	Horseweed	40	Sta.	Ragweed	40	Sta.
Texas	Bermudagrass	10	Sta.	Crabgrass	60	Down	Johnsongrass	60	Sta.	Pigweed	90	Down	Sandbur	60	Down
Virginia	Crabgrass	40	Sta.	Greenbriers	2	Up	Horsenettle	10	Up	----------	--	--	----------	--	--
Western:															
California	Barnyardgrass	30	Up	Bermudagrass	30	Up	Bindweed	40	Up	Johnsongrass	30	Sta.	Nutsedge	20	Up
Montana	Brome, downy	--	Up	Chickweed	--	Up	Gromwell	--	Up	Mustards	--	Sta.	Quackgrass	--	Sta.
New Mexico	Barnyardgrass	35	Sta.	Carelessweed	25	Sta.	Foxtail, green	30	Sta.	Kochia	35	Sta.	Lambsquarters	30	Sta.
Oregon	Barnyardgrass	20	Sta.	Bindweed, field	30	Up	Johnsongrass	10	Up	Quackgrass	20	Sta.	Ryegrass	30	Sta.
Utah	Bindweed, field	20	Up	Cocklebur	30	Up	Pigweed, redroot	90	Sta.	Puncturevine	30	Up	Quackgrass	25	Up
Washington	Cocklebur	20	Sta.	Dandelions	40	Up	Quackgrass	60	Up	Ragweed	20	Sta.	Thistle, Canada	10	Up

1/ Sta., stationary.

Table 121.--Tropical and subtropical fruits and nuts: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
California	16	4	2	9.00	14.00	16.00	90	10
Hawaii	25	9	1	28.00	40.00	55.00	100	--
Western	41	13	3	20.58	32.00	29.00	96	4
United States	41	13	3	20.58	32.00	29.00	96	4

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 122.--Tropical and subtropical fruits and nuts: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
California	Good	Fair	Fair	Sta.	Some	No	---
Hawaii	Good	Good	Good	Sta.	Some	No	---
Western	2-Good	1-Good 1-Fair	1-Good 1-Fair	2-Sta.	2-Some	2-No	---
United States	2-Good	1-Good 1-Fair	1-Good 1-Fair	2-Sta.	2-Some	2-No	---

1/ Sta., stationary.

Table 123.--Tropical and subtropical fruits and nuts: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Western:															
California	Barnyardgrass	20	Sta.	Bermudagrass	30	Up	Johnsongrass	10	Sta.	Nutsedge	30	Up	Puncturevine	10	Sta.
Hawaii	Crabgrass, large	55	Sta.	Dallisgrass	45	Up	Nutsedge, purple	25	Down	Tasselflower, red	50	Sta.	Vaseygrass	45	Up

1/ Sta., stationary.

Table 124.--Deciduous tree nuts: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
West Virginia	---	2/	---	----	20.00	----	100	--
Northeastern	---	2/	---	----	20.00	----	100	--
Kansas	---	1	---	----	7.00	----	100	--
North Central	---	1	---	----	7.00	----	100	--
Arkansas	2/	---	---	6.00	----	----	100	--
Oklahoma	45	---	---	5.50	----	----	80	20
Texas	10	---	---	7.00	----	----	100	--
Southern	55	---	---	5.77	----	----	84	16
Arizona	5	5	---	12.00	20.00	----	100	--
California	85	60	30	9.00	24.00	15.00	80	20
Oregon	2	1	---	10.00	3.00	----	100	--
Utah	2/	2/	---	3.00	1.00	----	80	20
Western	92	66	30	9.18	23.38	15.00	81	19
United States	147	67	30	7.90	23.14	15.00	82	18

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 125.--Deciduous tree nuts: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
West Virginia	---	Good	---	Up	Some	No	---
Northeastern	---	1-Good	---	1-Up	1-Some	1-No	---
Kansas	---	Fair	---	Up	Urgent	No	---
North Central	---	1-Fair	---	1-Up	1-Urgent	1-No	---
Arkansas	Good	---	---	Up	Little	No	---
Oklahoma	Good	---	---	Up	Some	No	---
Texas	Fair	---	---	Up	Urgent	No	---
Southern	2-Good 1-Fair	---	---	3-Up	1-Urgent 1-Some 1-Little	3-No	---
Arizona	Fair	Fair	---	Up	Urgent	No	---
California	Good	Fair	Good	Up	Urgent	No	---
Oregon	Good	Good	---	Up	Some	No	---
Utah	Good	Good	---	Up	Some	No	---
Western	3-Good 1-Fair	2-Good 2-Fair	1-Good	4-Up	2-Urgent 2-Some	4-No	---
United States	5-Good 2-Fair	3-Good 3-Fair	1-Good	9-Up	4-Urgent 4-Some 1-Little	9-No	---

1/ Sta., stationary.

Table 126.--Deciduous tree nuts: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
West Virginia---	Brambles----------	40	Up	Horsenettle---------	50	Up	Ivy, poison---------	60	Sta.	Nutsedge----------	20	Sta.	Quackgrass----------	60	Sta.
North Central:															
Kansas----------	Barnyardgrass-------	--	--	Bedstraw----------	--	--	Johnsongrass--------	--	--	Nutsedge----------	--	--	Ragweed----------	--	--
Southern:															
Alabama---------	Honeysuckle---------	20	Sta.	Horsenettle---------	40	Sta.	Ivy, poison---------	25	Sta.	Pigweed----------	65	Sta.	Sneezeweed, bitter--	50	Sta.
Arkansas--------	Bermudagrass--------	70	--	Crabgrass----------	60	--	Johnsongrass--------	40	--	Pigweed----------	50	--	----------	--	--
Georgia---------	Bermudagrass--------	60	Sta.	Chickweed----------	90	Up	Crabgrass----------	90	Sta.	Eveningprimrose-----	50	Up	Pepperweed----------	50	Up
Louisiana-------	Bermudagrass--------	80	Up	Crabgrass----------	75	Sta.	Johnsongrass--------	80	Up	Morningglory--------	65	Up	Pigweed----------	70	Sta.
Oklahoma--------	Bermudagrass--------	70	Sta.	Crabgrass----------	95	Sta.	Ivy, poison---------	20	Up	Johnsongrass--------	90	Sta.	Pigweed----------	80	Sta.
Texas-----------	Johnsongrass--------	40	Sta.	Kochia----------	20	Sta.	Pigweed----------	65	Sta.	Sandbur----------	20	Sta.	Sunflower----------	30	Sta.
Western:															
Arizona---------	Bermudagrass--------	15	Up	Johnsongrass--------	30	Sta.	Mustards----------	60	Sta.	Pigweed----------	50	Sta.	Watergrass----------	50	Sta.
California------	Barnyardgrass-------	90	Sta.	Bermudagrass--------	30	Up	Bindweed----------	30	Up	Johnsongrass--------	30	Sta.	----------	--	--
New Mexico------	Barnyardgrass-------	20	Sta.	Carelessweed--------	15	Sta.	Johnsongrass--------	15	Sta.	Kochia----------	10	Up	Lambsquarters-------	15	Sta.
Oregon----------	Bindweed, field-----	20	Up	Bluegrass, annual---	90	Sta.	Chickweed----------	90	Sta.	Ryegrass----------	70	Sta.	----------	--	--
Utah----------	Barnyardgrass-------	80	Sta.	Bindweed, field-----	20	Up	Johnsongrass--------	10	Up	Milkweed, western 2/	20	Up	Pigweed, redroot----	80	Sta.

1/Sta., stationary.
2/Milkweed, western whorled.

Table 127.--Small fruits: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	2/	---	---	15.00	---	---	100	---
Delaware	---	0.3	---	---	25.00	30.00	100	---
Maine	10	10	---	3.50	3.50	---	90	10
Maryland	.4	4	---	25.00	25.00	---	100	---
Massachusetts	.7	---	---	18.00	---	---	100	---
New Hampshire	.1	.1	2/	18.00	18.00	27.00	100	---
New Jersey	---	4	---	---	10.00	---	80	20
Pennsylvania	---	---	2	---	---	60.00	100	---
West Virginia	---	.5	---	---	45.00	---	100	---
Northeastern	11.2	15.3	2.0	5.30	7.63	60.00	90	10
Illinois	.8	---	---	25.00	---	---	95	5
Kansas	.1	2/	---	15.00	10.00	---	100	---
Michigan	20	5	5	18.00	16.00	27.00	60	40
Minnesota	.3	---	2/	15.00	---	20.00	90	10
Ohio	---	2	---	---	30.00	---	100	---
Wisconsin	.3	7.2	1.5	25.00	46.50	50.00	100	---
North Central	21.5	14.2	6.5	18.30	33.44	32.31	71	29
Alabama	2/	---	---	10.00	---	---	100	---
Arkansas	3	---	---	7.50	---	---	100	---
Georgia	.5	---	---	10.00	---	---	100	---
Kentucky	1	2/	---	10.00	5.00	---	100	---
Louisiana	1.5	---	---	15.00	---	---	95	5
Mississippi	2/	---	---	9.00	---	---	100	---
North Carolina	4	3	---	20.00	8.00	---	75	25
Oklahoma	.8	.2	---	8.00	2.00	---	90	10
Tennessee	1	.8	---	15.00	5.00	---	80	20
Texas	.5	---	---	7.00	---	---	100	---
Virginia	---	1	---	---	12.00	---	90	10
Southern	12.3	5.0	---	13.41	8.08	---	95	5
California	5	---	1	7.00	---	14.00	90	10
Oregon	20	---	5	15.00	---	20.00	70	30
Utah	.2	2/	---	20.00	12.00	---	80	20
Washington	---	5	---	---	12.00	---	95	5
Western	25.2	5.0	6.0	13.45	12.00	19.00	77	23
United States	70.2	39.5	14.5	13.63	17.52	30.62	80	20

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 128.--Small fruits: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Fair	---	---	Sta.	Some	No	---
Delaware	---	Good	Good	Up	Some	No	---
Maine	Fair	Fair	---	Up	Urgent	No	---
Maryland	Good	Good	---	Sta.	Little	No	---
Massachusetts	Fair	Fair	---	Up	Urgent	Yes	---
New Hampshire	Good	Good	Good	Up	Some	No	---
New Jersey	---	Fair	---	Up	Some	No	---
Pennsylvania	---	---	Good	Up	Urgent	No	---
West Virginia	---	Good	---	Up	Some	Yes	15
Northeastern	2-Good 3-Fair	4-Good 3-Fair	3-Good	7-Up 2-Sta.	3-Urgent 5-Some 1-Little	2-Yes 7-No	---
Illinois	Fair	---	---	Up	Urgent	No	---
Kansas	Fair	Fair	---	Up	Urgent	No	---
Michigan	Fair	Fair	Good	Up	Urgent	No	---
Minnesota	Good	---	Good	Up	Some	No	---
Ohio	---	Good	---	Up	Some	No	---
Wisconsin	Good	Good	Good	Sta.	Some	No	---
North Central	2-Good 3-Fair	2-Good 2-Fair	3-Good	5-Up 1-Sta.	3-Urgent 3-Some	6-No	---
Alabama	Fair	---	---	Sta.	Some	No	---
Arkansas	Good	---	---	Sta.	Little	No	---
Georgia	Good	---	---	Up	Some	No	---
Kentucky	Fair	Fair	---	Up	Some	No	---
Louisiana	Fair	---	---	Up	Some	No	---
Mississippi	Poor	---	---	Sta.	Urgent	No	---
North Carolina	Fair	Fair	---	Up	Urgent	No	---
Oklahoma	Fair	Fair	---	Sta.	Some	No	---
Tennessee	Fair	Fair	---	Up	Some	No	---
Texas	Good	---	---	Up	Some	No	---
Virginia	---	Fair	---	Up	Urgent	No	---
Southern	3-Good 6-Fair 1-Poor	5-Fair	---	7-Up 4-Sta.	3-Urgent 7-Some 1-Little	11-No	---
California	Fair	---	Fair	Sta.	Little	No	---
Oregon	Good	---	Good	Sta.	Some	Yes	20
Utah	Good	Good	---	Up	Some	No	---
Washington	---	Fair	---	Sta.	Some	Yes	10
Western	2-Good 1-Fair	1-Good 1-Fair	1-Good 1-Fair	1-Up 3-Sta.	3-Some 1-Little	2-Yes 2-No	15
United States	9-Good 13-No 1-Poor	7-Good 11-Fair	7-Good 1-Fair	20-Up 10-Sta.	9-Urgent 18-Some 3-Little	4-Yes 26-No	4

1/ Sta., stationary.

Table 129.--Small fruits: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Pct.	Trend 1/	Weed	Infestation Acres	Pct.	Trend 1/	Weed	Infestation Acres	Pct.	Trend 1/	Weed	Infestation Acres	Pct.	Trend 1/	Weed	Infestation Acres	Pct.	Trend 1/
Northeastern:																				
Connecticut	Bluegrass	50		Sta.	Cinquefoil	20		Sta.	Crabgrass	25		Down	Dandelions	50		Up	Quackgrass	70		Sta.
Maine	Aspen, bigtooth	60		Down	Chokeberry, black	50		Up	Hardhack	50		Sta.	Laurel, sheep	50		Down	Sweetfern	75		Down
New Hampshire	Crabgrass	40		Down	Lambsquarters	60		Down	Nutsedge	10		Sta.	Pigweed	60		Down	Quackgrass	60		Down
New Jersey	Bracken	10		Sta.	Buckwheat, wild	20		Up	Ivy, poison	30		Sta.	Sphagnum	20		Sta.	Switchgrass	35		Up
Pennsylvania	Foxtail, yellow	15		Sta.	Lambsquarters	18		Sta.	Pigweed, redroot	18		Sta.	Quackgrass	10		Sta.	----------	--		--
West Virginia	Bindweed, field	25		Up	Chickweed, common	60		Up	Nutsedge	30		Up	Quackgrass	60		Up	Sorrel, red	40		Up
North Central:																				
Illinois	Bindweed	---		Down	Bluegrass, annual	--		Sta.	Chickweed	--		Down	Johnsongrass	--		Sta.	Smartweed	--		Down
Indiana	Chickweed	25		--	Crabgrass	20		--	Foxtail	20		--	Morninglory	10		--	Smartweed	20		--
Kansas	Barnyardgrass	10		Sta.	Crabgrass	30		Down	Garlic, wild	2		Sta.	Ragweed	5		Down	----------	--		--
Michigan	Cheat	80		Down	Chickweed, common	25		Down	Crabgrass	40		Down	Panicum, fall	30		Sta.	Quackgrass	50		Down
Minnesota	Chickweed	70		Sta.	Dandelion	25		Sta.	Foxtails	90		Sta.	Quackgrass	75		Sta.	Shepherdspurse	70		Sta.
Ohio	Bindweed, field	30		Up	Chickweed, common	40		Sta.	Purslane	50		Sta.	Quackgrass	30		Up	Thistle, Canada	20		Up
Wisconsin 2/	Clover, white	30		Sta.	Dandelions	30		Sta.	Quackgrass	70		Sta.	Sorrel, red	20		Sta.	Thistle, Canada	30		Sta.
Southern:																				
Alabama	Bermudagrass	75		Sta.	Chickweed	50		Sta.	Crabgrass	70		Sta.	Lambsquarters	30		Sta.	Pusley, Florida	50		Sta.
Arkansas	Bermudagrass	30		--	Crabgrass	100		--	Johnsongrass	40		--	Pigweed	50		--	----------	--		--
Georgia	Bermudagrass	75		Up	Crabgrass	90		Sta.	Johnsongrass	50		Up	Nutsedge	50		Up	Pusley, Florida	30		Sta.
Kentucky	Chickweed	--		--	Crabgrass	--		--	Foxtail	--		--	Henbit	--		--	Sorrel, red	--		--
Louisiana	Bluegrass, annual	85		Sta.	Darnel	55		Up	Eveningprimrose	75		Up	Smartweed	55		Sta.	Spurry, corn	60		Sta.
North Carolina	Bermudagrass	15		Up	Chickweed	40		Sta.	Crabgrass	80		Sta.	Ragweed	10		Sta.	Sedge	15		Up
Oklahoma	Bermudagrass	65		Up	Crabgrass	95		Sta.	Johnsongrass	80		Sta.	Lambsquarters	50		Sta.	Pigweed	85		Sta.
Tennessee	Bermudagrass	10		Sta.	Chickweed	95		Sta.	Crabgrass	95		Sta.	Henbit	95		Sta.	Sorrel, red	60		Sta.
Texas	Crabgrass	40		Sta.	Johnsongrass	15		Sta.	Junglerice	20		Sta.	Panicum, browntop	20		Sta.	Pigweed	60		Sta.
Virginia	Barnyardgrass	5		Sta.	Chickweed	20		Up	Crabgrass	30		Up	Henbit	1		Up	Quackgrass	5		Sta.
Western:																				
California	Barnyardgrass	50		Up	Bermudagrass	40		Up	Bindweed	30		Up	Johnsongrass	30		Sta.	Pigweed	20		Up
Idaho	Kochia	10		Up	Lambsquarters	20		Sta.	Lettuce, prickly	10		Up	Pigweed, redroot	25		Sta.	Quackgrass	50		Up
Oregon	Pigweed, redroot	20		Down	Quackgrass	20		Sta.	Ryegrass	20		Down	Sorrel, red	10		Sta.	Thistle, Canada	10		Sta.
Utah	Barnyardgrass	50		Sta.	Bindweed, field	10		Up	Mallow	50		Sta.	Pigweed, redroot	90		Sta.	Quackgrass	25		Up
Washington	Chickweed	90		Sta.	Groundsel, common	90		Sta.	Ladysthumb	100		Sta.	Lambsquarters	100		Sta.	Quackgrass	10		Up

1/Sta., stationary.

2/Weeds listed for Wisconsin are those reported specifically for strawberries. Wisconsin also reported the following weeds in cranberry plantings: barnyardgrass 5 percent up; dewberries, 2 percent sta. fern, feathery, 5 percent sta.; fern, sensitive, 5 percent sta.; sedge, 50 percent up.

HORTICULTURAL CROPS--ORNAMENTALS

(See General Limitations)

Ornamental crops include annual species as well as herbaceous and woody perennial species. Weed control in nursery plantings is very complex, because the species and varieties of plants involved number in the hundreds. Most of these types have very specific requirements with respect to light, soil, nutrients, temperature, moisture, and cultural practices. Weed control requirements range from a few weeks with some species to several years with others. Methods of herbicide application include preplanting, preemergence, and postemergence treatments.[12] During 1968, approximately 43 percent of the total acreage of ornamentals was treated with herbicides.

Data on the extent, costs, and use of herbicides on ornamental plantings have been summarized in tables 130 through 144.

The 10 weeds reported most frequently in ornamental crops (in order of decreasing frequency) were: crabgrasses, chickweeds, quackgrass, pigweeds, nutsedges, lambsquarters, foxtails, bermudagrass, purslane, and bluegrass.

Tables for the individual categories of ornamental plants are grouped at the end of the discussions (see pages 151 through 164).

Herbaceous Ornamental Plants

During 1968, approximately 5,100 acres of herbaceous ornamental plantings were treated with herbicides. The total cost of herbicides and applications was $159,000. Preemergence treatments were applied on 88 percent of this acreage, while postemergence treatments were applied on the remaining 12 percent. Combined treatments were not used (tables 130, 131, and 132).

Bulb And Corm Crops

During 1968, approximately 13,000 acres of ornamental bulb and corm crop plantings were treated with herbicides. The total cost of herbicides and applications was $255,000. Preemergence treatments were applied on 91 percent of this acreage; postemergence treatments on 8 percent, and combination treatments on 1 percent (tables 133, 134, and 135).

Ornamental Seed Crops

Approximately 6,000 acres of ornamental seed crop plantings were treated with herbicides during 1968. The total cost of herbicides and applications was $71,000. Preemergence treatments were applied on 83 percent of this acreage, and postemergence treatments were applied on 17 percent. No combined treatments were reported (tables 136, 137, and 138).

[12]Preemergence and postemergence refer to the emergence of weeds in perennial woody species.

Woody Ornamentals

Approximately 36,100 acres of woody ornamental plantings were treated with herbicides during 1968. The total cost of herbicides and applications was $560,000. Preemergence treatments were applied on 64 percent of this acreage; postemergence treatments on 24 percent; and combination treatments on 12 percent (tables 139, 140, and 141).

Nursery Stock

During 1968, approximately 29,100 acres of ornamental nursery plantings were treated with herbicides. The total cost of herbicides and applications was $766,000. Preemergence treatments were applied on 46 percent of this acreage; postemergence treatments on 49 percent; and combination treatments on 5 percent (tables 142, 143, and 144).

Table 130.--Herbaceous materials: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
West Virginia	2/	2/	---	30.00	5.00	----	100	--
Northeastern	2/	2/	---	30.00	5.00	----	100	--
Kansas	2/	0.2	---	25.00	9.00	----	20	80
Michigan	0.5	---	---	20.00	----	----	60	40
Ohio	---	.2	---	----	20.00	----	100	--
North Central	.5	.4	---	20.00	14.50	----	60	40
Florida	2/	---	---	28.00	----	----	100	--
Virginia	---	2/	---	----	15.00	----	100	--
Southern	2/	2/	---	28.00	15.00	----	100	--
California	4	---	---	35.00	----	----	70	30
Hawaii	---	.2	---	----	15.00	----	100	--
Western	4.0	.2	---	35.00	15.00	----	71	29
United States	4.5	.6	---	33.33	14.67	----	69	31

1/ Includes herbicide equipment and labor for treatment made by farmers, Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 131.--Herbaceous materials: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
West Virginia	Fair	Fair	---	Up	Some	No	---
Northeastern	1-Fair	1-Fair	---	1-Up	1-Some	1-No	---
Kansas	Good	Poor	---	Up	Urgent	No	---
Michigan	Fair	---	---	Up	Some	No	---
Ohio	---	Fair	---	Up	Some	No	---
North Central	1-Good 1-Fair	1-Fair 1-Poor	---	3-Up	1-Urgent 2-Some	3-No	---
Florida	Fair	---	---	Sta.	Urgent	No	---
Virginia	---	Fair	---	Up	Some	No	---
Southern	1-Fair	1-Fair	---	1-Up 1-Sta.	1-Urgent 1-Some	2-No	---
California	Fair	---	---	Up	Urgent	Yes	20
Hawaii	---	Fair	---	Up	Urgent	No	---
Western	1-Fair	1-Fair	---	2-Up	2-Urgent	1-Yes 1-No	19
United States	1-Good 4-Fair	4-Fair 1-Poor	---	7-Up 1-Sta.	4-Urgent 4-Some	1-Yes 7-No	16

1/ Sta., stationary.

Table 132.--Herbaceous aterials: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
New Jersey------	Chickweed----------	75	Sta.	Crabgrass----------	75	Sta.	Foxtail, meadow-----	60	Up	Groundsel----------	45	Sta.	Henbit----------	60	Up
Pennsylvania----	Foxtail, yellow-----	--	Sta.	Galinsoga----------	--	Sta.	Lambsquarters-------	--	Sta.	Pigweed, redroot----	--	Sta.	Quackgrass----------	--	Up
West Virginia---	Chickweed, common---	75	Up	Dandelions----------	40	Up	Nutsedge-----------	40	Sta.	Quackgrass----------	90	Up	Rocket, yellow------	30	Sta.
North Central:															
Kansas----------	Chickweed----------	40	Sta.	Crabgrass----------	90	Sta.	Foxtails-----------	80	Sta.	Henbit----------	40	Sta.	Pigweed----------	50	Sta.
Michigan--------	Bluegrass, annual---	30	Up	Chickweed, common---	30	Down	Nutsedge-----------	5	Up	Purslane, common----	80	Down	Quackgrass----------	25	Sta.
Minnesota-------	Foxtails-----------	70	Sta.	Lambsquarters-------	60	Sta.	Pigweed------------	80	Sta.	Purslane----------	60	Sta.	Quackgrass----------	50	Sta.
Ohio------------	Chickweed, common---	25	Sta.	Grasses, perennial--	25	Up	Purslane-----------	50	Sta.	Quackgrass----------	20	Sta.	Velvetleaf----------	20	Up
Southern:															
Florida---------	Crabgrass----------	--	--	Purslane-----------	--	--	Pusley, Florida-----	--	--	Spurge----------	--	--	Wanderingjew--------	--	--
Oklahoma--------	Bermudagrass--------	70	Sta.	Crabgrass----------	95	Sta.	Johnsongrass--------	80	Sta.	Pigweed----------	90	Sta.	Purslane----------	60	Sta.
Virginia--------	Bermudagrass--------	10	Up	Chickweed----------	65	Sta.	Crabgrass----------	85	Up	Quackgrass----------	10	Up	Sorrel, red---------	65	Sta.
Western:															
California------	Bluegrass, annual---	60	Sta.	Cheeseweed----------	30	Up	Chickweed, common---	40	Sta.	Lambsquarters-------	20	Sta.	Nightshade----------	20	Up
Hawaii----------	Galinsoga, smallfl.2/	60	Up	Lambsquarters, common	40	Sta.	Nutsedge, purple----	10	Sta.	Swinecress----------	40	Up	Tasselflower, red---	10	Sta.

1/Sta., stationary.
2/Galinsoga, smallflower.

Table 133.--Bulb and corm crops: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
West Virginia	2/	2/	---	20.00	40.00	---	100	---
Northeastern	2/	2/	---	20.00	40.00	---	100	---
Illinois	1	---	---	15.00	---	---	75	25
Kansas	.1	2/	---	15.00	9.00	---	100	---
Michigan	.3	---	---	10.00	---	---	60	40
North Central	1.4	2/	---	13.93	9.00	---	74	26
Alabama	.2	2/	---	9.60	2.40	---	80	20
Arkansas	2/	---	---	10.00	---	---	100	---
Florida	2	1	---	28.00	36.00	---	100	---
North Carolina	1	---	---	7.00	---	---	75	25
Virginia	---	2/	---	---	12.00	---	100	---
Southern	3.2	1.0	---	20.29	36.00	---	93	7
California	5	---	---	15.00	---	---	70	30
Oregon	.3	---	0.1	20.00	---	30.00	100	---
Washington	2	---	---	25.00	---	---	40	60
Western	7.3	---	.1	17.95	---	30.00	64	36
United States	11.9	1.0	.1	18.11	36.00	30.00	74	26

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 134.--Bulb and corm crops: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
West Virginia	Fair	Fair	---	Up	Some	No	---
Northeastern	1-Fair	1-Fair	---	1-Up	1-Some	1-No	---
Illinois	Fair	---	---	Up	Some	No	---
Kansas	Good	Good	---	Up	Urgent	No	---
Michigan	Fair	---	---	Up	Some	No	---
North Central	1-Good 2-Fair	1-Good	---	3-Up	1-Urgent 2-Some	3-No	---
Alabama	Good	Good	---	Up	Some	No	---
Arkansas	Good	---	---	Up	Some	No	---
Florida	Good	Good	---	Sta.	Some	No	---
North Carolina	Fair	---	---	Up	Some	No	---
Virginia	---	Fair	---	Up	Urgent	No	---
Southern	3-Good 1-Fair	2-Good 1-Fair	---	4-Up 1-Sta.	1-Urgent 4-Some	5-No	---
California	Good	---	---	Up	Urgent	Yes	50
Oregon	Good	---	Good	Sta.	Some	No	---
Washington	Good	---	---	Sta.	Some	No	---
Western	3-Good	---	1-Good	1-Up 2-Sta.	1-Urgent 2-Some	1-Yes 2-No	34
United States	7-Good 4-Fair	3-Good 2-Fair	1-Good	9-Up 3-Sta.	3-Urgent 9-Some	1-Yes 11-No	19

1/ Sta., stationary.

Table 135.--Bulb and corm crops: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
New Jersey------	Crabgrass----------	25	Sta.	Foxtails----------	60	Sta.	Lambsquarters-------	55	Sta.	Nutsedge----------	10	Up	Ragweed----------	35	Sta.
Pennsylvania----	Foxtail, yellow-----	15	Down	Lambsquarters-------	35	Down	Pigweed, redroot----	40	Down	Purslane----------	10	Sta.	Ragweed----------	20	Down
West Virginia---	Chickweed, common---	70	Up	Nutsedge----------	40	Sta.	Panicum, Fall-------	60	Sta.	Quackgrass----------	50	Up	Ragweed, common-----	30	Sta.
North Central:															
Illinois--------	Crabgrass----------	100	Down	Lambsquarters-------	50	Up	Pigweed----------	50	Up	Purslane----------	90	Up	Smartweed----------	90	Up
Kansas----------	Chickweed----------	60	--	Crabgrass----------	90	Sta.	Foxtails----------	90	Sta.	Henbit----------	60	--	Pigweed----------	50	Sta.
Michigan--------	Bluegrass, annual---	20	Up	Chickweed----------	20	Down	Nutsedge----------	5	Up	Quackgrass----------	25	Sta.	Thistle, Canada-----	10	Up
Minnesota-------	Foxtails----------	70	Sta.	Lambsquarters-------	60	Sta.	Mustard----------	50	Sta.	Pigweed----------	30	Sta.	Quackgrass----------	50	Sta.
Southern:															
Alabama---------	Betony, Florida ----	35	Up	Cocklebur ----------	40	Sta.	Crabgrass ---------	80	Down	Johnsongrass-------	35	Down	Nutsedge----------	25	Down
Arkansas--------	Barnyardgrass-------	80	Sta.	Bermudagrass--------	20	Sta.	Crabgrass----------	98	Sta.	Johnsongrass--------	25	Down	Pigweed----------	98	Sta.
Florida---------	Bermudagrass--------	--	--	Crabgrass----------	--	--	Goosegrass----------	--	--	Pusley, Florida-----	--	--	Spurge----------	--	--
North Carolina--	Crabgrass----------	90	Sta.	Goosegrass----------	40	Sta.	Ragweed----------	15	Sta.	----------	--	--	----------	--	--
Oklahoma--------	Bermudagrass--------	70	Sta.	Crabgrass----------	100	Sta.	Johnsongrass--------	50	Sta.	Pigweed----------	90	Sta.	Sandbur----------	10	Up
Virginia--------	Bermudagrass--------	5	Sta.	Crabgrass----------	80	Sta.	Galinsoga----------	15	Up	Goosegrass----------	30	Sta.	Purslane----------	25	Sta.
Western:															
California------	Cheeseweed----------	40	Up	Chickweed, common---	40	Sta.	Lambsquarters-------	60	Sta.	Nightshade----------	30	Up	Rocket, London------	30	Up
Oregon----------	Bluegrass, annual---	20	Down	Chickweed----------	20	Down	Groundsel----------	20	Down	Ryegrass----------	40	Sta.	Spurry----------	20	Down
Washington------	Buckwheat, wild-----	100	Sta.	Chickweed----------	100	Sta.	Knotweed, prostrate-	100	Sta.	Ladysthumb----------	100	Sta.	Lambsquarters-------	100	Sta.
Wyoming---------	Bindweed, field-----	30	Up	Brome, downy--------	60	Up	Pigweed, redroot----	50	Up	Sunflower----------	40	Up	Thistle, Russian----	50	Up

1/Sta., stationary.

Table 136.--Ornamental seed crops: Estimated extent and cost of chemical weed control by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Kansas	2/	---	---	30.00	----	----	100	--
North Central	2/	2/	---	30.00	----	----	100	--
California	2	0.5	---	8.00	5.00	----	90	10
Washington	3	.5	---	15.00	15.00	----	30	70
Western	5.0	1.0	---	12.20	10.00	----	55	45
United States	5.0	1.0	---	12.20	10.00	----	55	45

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.
2/ Less than 50 acres.

Table 137.--Ornamental seed crops: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Kansas	Fair	---	---	Up	Urgent	No	---
North Central	1-Fair	---	---	1-Up	1-Urgent	1-No	---
California	Fair	Fair	---	Up	Urgent	Yes	60
Washington	Good	Good	---	Up	Some	No	---
Western	1-Good 1-Fair	1-Good 1-Fair	---	2-Up	1-Urgent 1-Some	1-Yes 1-No	25
United States	1-Good 2-Fair	1-Good 1-Fair	---	3-Up	2-Urgent 1-Some	1-Yes 2-No	25

1/ Sta., stationary.

Table 138.--Ornamental seed crops: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1963

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Pennsylvania----	Chickweed----------	30	Up	Lambsquarters-------	18	Sta.	Pigweed, redroot----	20	Sta.	Quackgrass----------	12	Up	Ragweed------------	15	Sta.
North Central:															
Kansas----------	Chickweed----------	90	Sta.	Crabgrass----------	90	Sta.	Foxtails-----------	90	Sta.	Henbit-------------	90	Sta.	Pigweed------------	90	Sta.
Western:															
California------	Cheeseweed---------	20	Up	Chickweed, common---	30	Sta.	Knotweed-----------	30	Sta.	Lambsquarters-------	60	Sta.	Spurry, corn--------	20	Sta.

1/ Sta., stationary.

Table 139.--Woody ornamentals: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
New Hampshire	0.1	0.3	---	30.00	60.00	----	70	30
West Virginia	2/	.1	---	20.00	50.00	----	100	--
Northeastern	.1	.4	---	30.00	57.50	----	76	24
Illinois	3	---	---	10.75	----	----	100	--
Kansas	.2	2/	---	20.00	8.00	----	95	5
Michigan	.5	---	0.5	10.00	----	20.00	60	40
Ohio	---	2	---	----	20.00	----	100	--
North Central	3.7	2.0	.5	11.15	20.00	20.00	93	7
Alabama	2	1	---	6.00	4.00	----	60	40
Arkansas	2/	---	---	10.00	----	----	100	--
Florida	1	.5	---	56.00	25.00	----	100	--
Georgia	.5	---	---	15.00	----	----	100	--
Kentucky	.5	---	---	13.00	----	----	25	75
Louisiana	1	---	---	25.00	----	----	95	5
North Carolina	1	1	---	10.00	8.00	----	75	25
Tennessee	1	.2	---	15.00	5.00	----	80	20
Virginia	---	.3	---	----	15.00	----	60	40
Southern	7.0	3.0	---	18.86	10.00	----	75	25
California	11	3	4	15.00	5.00	20.00	50	50
Oregon	.5	---	---	25.00	----	----	20	80
Washington	.7	---	---	10.00	----	----	90	10
Hawaii	---	.2	---	----	5.00	----	100	--
Western	12.2	3.2	4.0	15.12	5.00	20.00	51	49
United States	23.0	8.6	4.5	15.68	12.67	20.00	65	35

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 140.--Woody ornamentals: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
New Hampshire	Good	Good	---	Up	Some	No	---
West Virginia	Fair	Fair	---	Up	Urgent	Yes	10
Northeastern	1-Good 1-Fair	1-Good 1-Fair	---	2-Up	1-Urgent 1-Some	1-Yes 1-No	2
Illinois	Good	---	---	Up	Urgent	Yes	50
Kansas	Good	Good	---	Up	Urgent	No	---
Michigan	Good	---	Good	Up	Some	No	---
Ohio	---	Good	---	Up	Some	No	---
North Central	3-Good	2-Good	1-Good	4-Up	2-Urgent 2-Some	1-Yes 3-No	24
Alabama	Good	Good	---	Up	Some	No	---
Arkansas	Good	---	---	Up	Little	No	---
Florida	Good	Good	---	Up	Some	No	---
Georgia	Good	---	---	Up	Some	No	---
Kentucky	Fair	---	---	Up	Some	No	---
Louisiana	Fair	---	---	Up	Little	No	---
North Carolina	Fair	Good	---	Up	Urgent	No	---
Tennessee	Good	Fair	---	Up	Some	No	---
Virginia	---	Fair	---	Up	Some	No	---
Southern	5-Good 3-Fair	3-Good 2-Fair	---	9-Up	1-Urgent 6-Some 2-Little	9-No	---
California	Good	Fair	Good	Up	Urgent	Yes	20
Oregon	Fair	---	---	Up	Some	No	---
Washington	Good	---	---	Up	Urgent	No	---
Hawaii	---	Good	---	Sta.	Some	No	---
Western	2-Good 1-Fair	1-Good 1-Fair	1-Good	3-Up 1-Sta.	2-Urgent 2-Some	1-Yes 3-No	19
United States	11-Good 5-Fair	7-Good 4-Fair	2-Good	18-Up 1-Sta.	6-Urgent 11-Some 2-Little	3-Yes 16-No	14

1/ Sta., stationary.

Table 141.--Woody ornamentals: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut 2/	Bindweed	95	Up	Crabgrass	100	Up	Dandelion	100	Up	Galinsoga	85	Up	Quackgrass	100	Up
Maryland	Chickweed	40	Sta.	Crabgrass	80	Sta.	Pigweed	60	Sta.	Ragweed	50	Up	Smartweed	30	Sta.
New Hampshire	Chickweed	70	Up	Crabgrass	60	Down	Lambsquarters	50	Down	Nutsedge	10	Sta.	Quackgrass	60	Down
New Jersey	Bindweed, hedge	35	Up	Chickweed	75	Sta.	Foxtail, meadow	25	Up	Horsetail	40	Up	Mugwort	15	Sta.
Pennsylvania	Foxtails	--	Down	Goldenrod	--	Up	Lambsquarters	--	Down	Pigweed, redroot	--	Down	Quackgrass	90	Sta.
Vermont	Chickweed	70	Sta.	Grasses, annual	25	Up	Nutsedge	20	Up	Purslane	50	Up	Quackgrass	90	Sta.
West Virginia	Bindweed, field	40	Up	Dandelion	60	Up	Nutsedge	40	Sta.	Quackgrass	90	Up	Rocket, yellow	30	Up
North Central:															
Illinois	Bindweed, field	10	Up	Crabgrass	100	Down	Lambsquarters	50	Down	Quackgrass	30	--	Smartweed	50	Down
Indiana	Bindweed	50	Up	Garlic, wild	10	Sta.	Mugwort	10	Sta.	Quackgrass	30	Sta.	Thistle, Canada	10	Sta.
Iowa	Bluegrass	100	Sta.	Foxtails	100	Sta.	----------	--	--	----------	--	--	----------	--	--
Kansas	Bermudagrass	20	Up	Bindweed	10	Down	Crabgrass	90	Sta.	Foxtails	75	Sta.	Pigweed	80	Sta.
Michigan	Bindweed, field	10	Up	Bluegrass, annual	20	Sta.	Panicum, Fall	30	Sta.	Quackgrass	40	Sta.	Thistle, Canada	5	Up
Minnesota	Dandelion	60	Sta.	Foxtails	80	Sta.	Purslane	60	Sta.	Quackgrass	50	Sta.	Shepherdspurse	60	Sta.
Ohio	Barnyardgrass	35	Up	Bindweed, field	25	Up	Chickweed, common	50	Sta.	Quackgrass	20	Up	Thistle, Canada	20	Up
Wisconsin	Dandelion, common	50	Sta.	Foxtail, green	100	Sta.	Pigweed, redroot	100	Sta.	Plantain, broadleaf	50	Sta.	Quackgrass	50	Sta.
Southern:															
Alabama	Betony, Fla.	15	Up	Dogfennel	20	Sta.	Henbit	40	Up	Nutsedge	25	Down	Pusley, Fla.	40	Down
Arkansas	Bermudagrass	20	Sta.	Crabgrass	98	Sta.	Henbit	85	Sta.	Johnsongrass	25	Sta.	Nutsedge	50	Up
Florida	Betony, Fla.	--	--	Crabgrass	--	--	Nutsedge, purple	--	--	Pusley, Florida	--	--	Wanderingjew	--	--
Georgia	Betony, Fla.	35	Up	Crabgrass	90	Sta.	Johnsongrass	30	Up	Nutsedge	65	Up	Sicklepod	50	Sta.
Kentucky	Chickweed	--	--	Crabgrass	--	--	Foxtails	--	--	Henbit	--	--	Pigweed	--	--
Louisiana	Bermudagrass	65	Sta.	Bluegrass, annual	85	Sta.	Crabgrass	90	Sta.	Poor-joe	80	Sta.	Pusley, Florida	70	Up
Mississippi	Bermudagrass	--	--	Crabgrass	--	--	Johnsongrass	--	--	Nutsedge	--	--	Onion, wild	--	--
North Carolina	Bermudagrass	20	Up	Chickweed	30	Sta.	Crabgrass	95	Sta.	Nutsedge	10	Sta.	Quackgrass	10	Sta.
Oklahoma	Bermudagrass	70	Sta.	Crabgrass	90	Sta.	Dock, curly	20	Up	Johnsongrass	50	Sta.	Purslane	35	Up
Virginia	Bermudagrass	10	Up	Chickweed	25	Up	Crabgrass	75	Sta.	Mugwort	5	Up	Quackgrass	5	Up
Western:															
Arizona	Bermudagrass	100	Sta.	Crabgrass	10	Sta.	Nutsedge	30	Sta.	Spurge, prostrate	50	Sta.	----------	--	--
California	Bluegrass, annual	50	Up	Groundsel	20	Up	Sowthistle, annual	20	Up	Spurge	70	Up	Woodsorrel	50	Up
Oregon	Bluegrass, annual	50	Down	Groundsel	20	Up	Horsetail	10	Down	Quackgrass	10	Down	----------	--	--
Utah	Barnyardgrass	50	Up	Bindweed, field	50	Up	Kochia	50	Up	Pigweed, redroot	80	Sta.	Thistle, Russian	60	Sta.
Washington	Bluegrass, annual	100	Sta.	Chickweed	100	Sta.	Ladysthumb	100	Sta.	Lambsquarters	100	Sta.	Quackgrass	20	Sta.
Hawaii	Crabgrass, large	15	Sta.	Galinsoga, smallflower	30	Sta.	Nutsedge, purple	45	Sta.	Pusley, Florida	30	Sta.	Tasselflower, red	35	Sta.

1/ Sta., stationary.
2/ Connecticut also reported: Vetch 90 Up.

Table 142.--Nursery stock: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	5	0.5	0.4	15.00	12.00	10.00	50	50
Delaware	.3	.7	.1	40.00	100.00	150.00	100	--
Maryland	.5	---	---	20.00	----	----	100	--
Massachusetts	.2	1	2/	20.00	30.00	----	90	10
New Hampshire	.2	2/	2/	30.00	60.00	80.00	75	25
Pennsylvania	---	6	---	----	9.50	----	90	10
West Virginia	---	2/	---	----	70.00	----	100	--
Northeastern	6.2	8.2	.5	17.26	19.88	36.00	75	25
Illinois	.1	---	---	50.00	----	----	100	--
Iowa	.5	---	.5	4.00	----	4.00	100	--
Kansas	.1	2/	2/	20.00	8.00	28.00	95	5
Michigan	.5	---	.5	10.00	----	20.00	60	40
Ohio	---	4	---	----	20.00	----	100	--
North Central	1.2	4.0	1.0	11.67	20.00	12.00	93	7
Arkansas	2/	---	---	10.00	----	----	100	--
Oklahoma	2	---	---	12.00	----	----	75	25
Tennessee	1	---	---	15.00	----	----	90	10
Virginia	.5	2	---	200.00	30.00	----	90	10
Southern	3.5	2.0	---	29.71	30.00	----	85	15
California	2	---	---	80.00	----	----	90	10
Oregon	.5	---	---	25.00	----	----	80	20
Utah	2/	---	---	10.00	----	----	100	--
Western	2.5	---	---	69.00	----	----	88	12
United States	13.4	14.2	1.5	32.28	21.34	20.00	82	18

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom application and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 143.--Nursery stock: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Fair	Fair	Fair	Up	Urgent	No	---
Delaware	Good	Good	Good	Up	Urgent	No	---
Maryland	Fair	---	---	Up	Some	Yes	10
Massachusetts	Good	Good	Good	Up	Urgent	Yes	10
New Hampshire	Fair	Good	Fair	Up	Some	No	---
Pennsylvania	---	Good	---	Up	Some	No	---
Vermont	---	Good	---	Up	Some	No	---
West Virginia	---	Fair	---	Up	Urgent	No	---
Northeastern	2-Good 3-Fair	5-Good 2-Fair	2-Good 2-Fair	8-Up	4-Urgent 4-Some	2-Yes 6-No	1
Illinois	Good	---	---	Up	Urgent	Yes	100
Iowa	Good	---	Good	Sta.	Some	No	---
Kansas	Good	Good	Good	Up	Urgent	No	---
Michigan	Good	---	Good	Up	Some	No	---
Ohio	---	Good	---	Up	Some	No	---
North Central	4-Good	2-Good	3-Good	4-Up 1-Sta.	2-Urgent 3-Some	1-Yes 4-No	2
Arkansas	Good	---	---	Up	Little	No	---
Oklahoma	Fair	---	---	Up	Some	No	---
Tennessee	Fair	---	---	Up	Some	No	---
Virginia	Fair	Fair	---	Up	Some	No	---
Southern	1-Good 3-Fair	1-Fair	---	4-Up	3-Some 1-Little	4-No	---
California	Fair	---	---	Up	Urgent	No	---
Oregon	Fair	---	---	Sta.	Some	No	---
Utah	Good	---	---	Up	Some	No	---
Western	1-Good 2-Fair	---	---	2-Up 1-Sta.	1-Urgent 2-Some	3-No	---
United States	8-Good 8-Fair	7-Good 3-Fair	5-Good 2-Fair	18-Up 2-Sta.	7-Urgent 12-Some 1-Little	3-Yes 17-No	1

1/ Sta., stationary.

Table 144.--Nursery stock: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation	Trend 1/	Weed	Infestation	Trend 1/	Weed	Infestation	Trend 1/	Weed	Infestation	Trend 1/	Weed	Infestation	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Southern:															
Arkansas	Bermudagrass	20	Sta.	Crabgrass	98	Sta.	Henbit	85	Sta.	Johnsongrass	25	Sta.	Nutsedge	50	Up
Oklahoma	Bermudagrass	70	Sta.	Crabgrass	85	Sta.	Johnsongrass	60	Sta.	Pigweed	85	Sta.	Purslane	60	Sta.
Western:															
California	Bluegrass, annual	30	Sta.	Chickweed, common	50	Sta.	Mustard, wild	30	Sta.	Oats, wild	30	Sta.	----------	--	--
Oregon	Bluegrass, annual	50	Sta.	Chickweed	20	Down	Groundsel	30	Sta.	Quackgrass	10	Down	Ryegrass	20	Sta.

1/ Sta., stationary.

LAWNS AND OTHER TURF AREAS

(See General Limitations)

About 20 million acres of turf are distributed nationwide in home lawns, school installations, industrial grounds, military reservations, cemeteries, parks, and golf courses.

Weeds rank as one of the major problems in turf, as judged by consumer interest and demand for tools and chemicals for weed control (tables 145 through 150).

Thirty-nine States have estimated that over 3.8 million acres of turf were treated with herbicides during 1968 at a total cost of almost $113 million. Custom operators treated 21 percent of this acreage. Twenty-four States reported good effectiveness for preemergence treatments, while 27 States revealed an upward trend in herbicide usage (tables 1-7, 145, 146, 148, and 149).

As indicated by their frequency of listing, the most important weeds in lawns and other turf areas, respectively, were: crabgrasses (32 and 27 States), dandelions (30 and 24), chickweed (27 and 17), annual bluegrass (13 and 22), and plantain species (16 and 12). Satisfactory control methods are available for all of these species except annual bluegrass.

Other species mentioned almost as frequently included: quackgrass (11 and 8 States), knotweed (10 and 8), nutsedge (8 and 6), henbit (8 and 4), and ground ivy (6 and 5). Other species mentioned represented a significant amount of infested acreage; otherwise, they would not have been listed as one of the five most important weeds in even one State (tables 147 and 150).

Perennial grasses are particularly difficult to control selectively in turf situations. The more frequently mentioned perennial grasses in lawns and in other turf areas, respectively, were listed as follows: quackgrass (10 and 8 States), tall fescue and other fescues (9 and 3), dallisgrass and other *Paspalum* species (4 and 6), and bentgrass (5 and 2). Other perennial grass species mentioned by more than one State included: smooth bromegrass, bahiagrass, bermudagrass, nimblewill, velvetgrass, and johnsongrass.

It is noteworthy that many of the species listed infest a high percentage of the lawns. This indicates a sizable acreage where control methods are needed. Also, even though there may now be a useful control method for many species, this does not preclude wide acceptance of a more effective method, should it become available. More effective and efficient herbicides are needed to cope with lawn weed problems.

Table 145.--Home lawns: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	2/	40	5	30.00	30.00	60.00	95	5
Delaware	4	4	2	10.00	6.00	15.00	75	25
Massachusetts	5	5	---	30.00	15.00	----	90	10
New Hampshire	1	8	---	40.00	20.00	----	50	50
New Jersey	12	20	---	75.00	20.00	----	85	15
Pennsylvania	6	301	1	50.00	18.00	68.00	75	25
Rhode Island	3	1	3	35.00	20.00	50.00	80	20
Vermont	---	2	---	----	15.00	----	50	50
West Virginia	---	5	---	----	8.00	----	80	20
Northeastern	31	386	11	49.52	19.09	49.82	78	22
Illinois	10	20	15	100.00	10.00	110.00	80	20
Iowa	10	200	30	10.00	2.00	12.00	95	5
Kansas	4	6	1	30.00	10.00	40.00	90	10
Minnesota	30	30	30	180.00	80.00	260.00	90	10
North Dakota	1	20	---	5.00	3.00	----	75	25
Ohio	50	166	30	60.00	20.00	80.00	60	40
South Dakota	1	2	---	30.00	10.00	----	95	5
North Central	106	444	106	91.08	14.55	115.57	79	21
Arkansas	1	15	18	220.00	25.00	245.00	80	20
Florida	40	20	10	175.00	250.00	200.00	50	50
Georgia	50	100	---	12.00	4.00	----	90	10
Kentucky	10	15	---	50.00	10.00	----	75	25
Louisiana	5	---	---	25.00	----	----	90	10
Mississippi	10	75	80	40.00	6.00	45.00	80	20
North Carolina	10	70	5	40.00	15.00	45.00	80	20
Oklahoma	15	25	5	14.00	9.00	17.50	50	50
South Carolina	5	5	10	10.00	5.00	15.00	85	15
Tennessee	5	15	---	20.00	2.50	----	90	10
Texas	100	50	10	25.00	12.00	37.00	90	10
Virginia	---	55	---	----	35.00	----	70	30
Southern	251	445	138	48.23	23.01	78.57	79	21
Arizona	5	10	---	40.00	10.00	----	90	10
California	25	30	10	65.00	25.00	75.00	80	20
Idaho	---	15	---	----	5.00	----	75	25
Montana	2	15	2	7.00	3.00	9.00	80	20
Nevada	2/	2/	---	20.00	8.00	----	90	10
Utah	2	6	---	15.00	4.00	----	70	30
Washington	6	6	---	7.00	5.00	----	90	10
Wyoming	---	2	---	----	5.00	----	75	25
Hawaii	2/	1	2/	20.00	25.00	35.00	50	50
Western	40	85	12	47.78	12.46	64.00	81	19
United States	428	1,360	267	58.89	18.48	91.42	79	21

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 146.--Home lawns: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Good	Good	Good	Up	Some	No	---
Delaware	Good	Fair	Good	Up	Some	Yes	10
Massachusetts	Good	Good	---	Up	Some	No	---
New Hampshire	Fair	Good	---	Up	Some	No	---
New Jersey	Good	Good	---	Up	Some	No	---
Pennsylvania	Good	Good	Good	Up	Some	No	---
Rhode Island	Good	Good	Good	Up	Some	No	---
Vermont	---	Good	---	Up	Some	No	---
West Virginia	---	Fair	---	Up	Some	No	---
Northeastern	6-Good 1-Fair	7-Good 2-Fair	4-Good	9-Up	9-Some	1-Yes 8-No	---
Illinois	Fair	Fair	Fair	Up	Some	No	---
Iowa	Good	Good	Good	Up	Some	No	---
Kansas	Good	Fair	Fair	Up	Some	No	---
Minnesota	Good	Fair	Fair	Up	Urgent	No	---
North Dakota	Good	Good	---	Up	Some	No	---
Ohio	Good	Good	Good	Up	Some	No	---
South Dakota	Good	Good	---	Sta.	Some	No	---
North Central	6-Good 1-Fair	4-Good 3-Fair	2-Good 3-Fair	6-Up 1-Sta.	1-Urgent 6-Some	7-No	---
Arkansas	Good	Good	Good	Up	Some	No	---
Florida	Good	Good	Good	Up	Urgent	No	---
Georgia	Good	Good	---	Up	Some	No	---
Kentucky	Good	Good	---	Up	Some	No	---
Louisiana	Good	---	---	Up	Little	No	---
Mississippi	Good	Fair	Good	Up	Some	No	---
North Carolina	Good	Good	Good	Up	Some	No	---
Oklahoma	Fair	Fair	Good	Up	Some	No	---
South Carolina	Fair	Fair	Fair	Up	Some	No	---
Tennessee	Fair	Good	---	Up	Some	No	---
Texas	Good	Good	Good	Up	Some	No	---
Virginia	---	Fair	---	Up	Some	No	---
Southern	8-Good 3-Fair	7-Good 4-Fair	6-Good 1-Fair	12-Up	1-Urgent 10-Some 1-Little	12-No	---
Arizona	Good	Good	---	Up	Little	Yes	5
California	Good	Fair	Good	Up	Urgent	Yes	20
Idaho	---	Good	---	Up	Little	No	---
Montana	Fair	Good	Good	Up	Little	No	---
Nevada	Fair	Good	---	Up	Some	No	---
Utah	Fair	Fair	---	Up	Urgent	Yes	5
Washington	Good	Good	---	Up	Some	Yes	10
Wyoming	---	Good	---	Up	Some	No	---
Hawaii	Good	Good	Good	Up	Urgent	No	---
Western	4-Good 3-Fair	7-Good 2-Fair	3-Good	9-Up	3-Urgent 3-Some 3-Little	4-Yes 5-No	11
United States	24-Good 8-Fair	25-Good 11-Fair	15-Good 4-Fair	36-Up 1-Sta.	5-Urgent 28-Some 4-Little	5-Yes 32-No	1

1/ Sta., stationary.

Table 147.--Home lawns: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 196[illegible]

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Chickweed	50	Sta.	Crabgrass	75	Down	Dandelion	50	Down	Plantains	50	Sta.	Starwort, little	40	Up
Delaware	Bluegrass, annual	25	Sta.	Fescue, tall	15	Up	Ivy, ground	10	Sta.	Onion, wild 2/	50	Sta.	Sorrel, red	10	Up
Maryland	Bluegrass, annual	40	Up	Crabgrass	80	Sta.	Dandelion	60	Sta.	Nutsedge	25	Up	Plantain	30	Sta.
Massachusetts	Chickweed	65	Sta.	Clover, white	40	Sta.	Crabgrass	85	Sta.	Dandelion	90	Sta.	Plantains	90	Sta.
New Hampshire	Crabgrass	60	Down	Dandelions	80	Down	Ironweed	10	Sta.	Plantain	20	Sta.	Plantain, buckhorn	30	Sta.
New Jersey	Cinquefoil	20	Sta.	Dandelion	75	Up	Grasses, perennial	60	Up	Knotweed	65	Sta.	Medic, black	30	Up
Pennsylvania	Chickweed	35	Sta.	Crabgrass	45	Up	Dandelion	40	Sta.	Plantain	10	--	Rocket, yellow	25	Sta.
Rhode Island	Chickweed	98	Down	Crabgrass	98	Down	Dandelion	98	Down	Knotweed	98	Down	Plantain	98	Down
Vermont	Crabgrass	25	Sta.	Dandelion	70	Down	Ivy, ground	25	Sta.	Knotweed	25	Sta.	Plantain	45	Down
West Virginia	Crabgrass	75	Up	Ivy, ground	80	Sta.	Mallow, common	40	Sta.	Plantain, blackseed	50	Down	Plantain, buckhorn	60	Down
North Central:															
Illinois	Bentgrass	25	Up	Crabgrass	100	Down	Dandelions	100	Down	Fescue, tall	40	Sta.	Nimblewill	25	Up
Indiana	Bluegrass, annual	--	--	Fescue, tall	--	--	Knotweed	--	--	Nimblewill	--	--	Sorrel, red	--	--
Iowa	Chickweed	100	Sta.	Ivy, ground	100	Sta.	Knotweed, prostrate	100	Sta.		--	--		--	--
Kansas	Chickweed	70	Sta.	Crabgrass	90	Sta.	Dandelion	60	Sta.	Nimblewill	15	Sta.	Nutsedge, yellow	10	Up
Michigan	Bentgrass	20	Up	Fescue, tall	15	Up	Nutsedge	10	Up	Quackgrass	20	Up	Sorrel	15	Sta.
Minnesota	Bentgrass	40	Up	Chickweed	30	Sta.	Crabgrass	50	Sta.	Dandelion	70	Sta.	Quackgrass	15	Sta.
Missouri	Chickweed, common	90	Sta.	Crabgrass, large	90	Sta.	Dandelion	100	Sta.	Goosegrass	75	Sta.	Henbit	90	Sta.
Nebraska	Crabgrass	70	Down	Dandelion	85	Sta.	Foxtail	60	Down	Knotweed, prostrate	40	Up	Spurge, prostrate	50	Up
North Dakota	Brome, smooth	35	Sta.	Chickweed, common	35	Up	Dandelion, common	90	Sta.	Knotweed, prostrate	45	Sta.	Quackgrass	50	Sta.
Ohio	Crabgrass	20	Down	Fescue, tall	25	Sta.	Nimblewill	25	Sta.	Nutsedge, yellow	20	Sta.	Quackgrass	10	Up
South Dakota	Bromegrasses, weedy	50	Sta.	Crabgrass	75	Sta.	Dandelion	100	Sta.	Ivy, ground	50	Sta.	Quackgrass	50	Sta.
Wisconsin	Bentgrass, creeping	20	Up	Chickweed, common	80	Down	Chickweed, mousear	80	Down	Fescue, tall	15	Up	Quackgrass	95	Sta.
Southern:															
Alabama	Bahiagrass	--	Up	Bluegrass, annual	--	Up	Chickweed	--	Up	Garlic, wild	--	Up	Henbit	--	Up
Arkansas	Chickweed	90	Sta.	Crabgrass, large	95	Sta.	Dandelion, common	50	Sta.	Henbit	90	Sta.	Plantain, buckhorn	20	Sta.
Florida	Betony, Florida	40	Up	Kyllinga, green	60	Down	Lippia	30	Up	Nutsedge, purple	30	Up	Spurge	70	Up
Georgia	Bluegrass, annual	60	Up	Chickweed	50	Sta.	Crabgrass	90	Sta.	Dandelion	70	Sta.	Henbit	50	Sta.
Kentucky	Chickweed	--	Up	Crabgrass	--	Up	Henbit	--	--	Sorrel, red	--	--	Woodsorrel	--	--
Louisiana	Bluegrass, annual	90	Up	Chickweed	85	Sta.	Crabgrass	85	Sta.	Dallisgrass	70	Up	Goosegrass	70	Sta.
Mississippi	Chickweed	35	Up	Clovers	40	Sta.	Crabgrass	75	Down	Dallisgrass	60	Sta.	Nutsedge	35	Up
North Carolina	Chickweed	60	Sta.	Crabgrass	90	Up	Dandelion	70	Sta.	Garlic, wild	75	Sta.	Henbit	60	Sta.
Oklahoma	Chickweed	--	--	Crabgrass	--	--	Dandelion	--	--	Henbit	--	--	Sandbur	--	--
South Carolina	Bluegrass, annual	50	Sta.	Chickweed	40	Sta.	Crabgrass	95	Sta.	Garlic, wild	50	Sta.	Henbit	50	Sta.
Tennessee	Crabgrass	85	Up	Dandelion	40	Sta.	Garlic, wild	75	Up	Paspalums	30	Sta.	Plantain	40	Sta.
Texas	Bluegrass, annual	10	Sta.	Burclover	40	Sta.	Dallisgrass	10	Sta.	Dandelion	20	Sta.	Ivy, ground	20	Sta.
Virginia	Bermudagrass	15	Up	Crabgrass	65	Sta.	Orchardgrass	5	Up	Quackgrass	10	Up	Sorrel, red	10	Up
Western:															
Arizona	Bermudagrass	50	Sta.	Crabgrass	50	Sta.	Mustards	50	Sta.	Nutsedge	25	Up	Spurge	70	Sta.
California	Bermudagrass	20	Sta.	Bluegrass, annual	40	Up	Chickweed	30	Sta.	Crabgrass	40	Sta.	Spurge, spotted	30	Up
Colorado	Chickweed	30	Sta.	Crabgrass	40	Sta.	Dandelions	95	Sta.	Fescues	50	Up	Quackgrass	25	Up
Idaho	Chickweed	50	Sta.	Crabgrass	10	Down	Dandelion	70	Sta.	Plantain, broadleaf	50	Sta.	Quackgrass	30	Sta.
Montana	Bellflower	15	Up	Chickweed	35	Up	Dandelion	85	Down	Medic, black	30	Sta.	Quackgrass	10	Sta.
Nevada	Bluegrass, annual	50	Sta.	Fescue, tall	30	Sta.	Nimblewill	20	Sta.	Velvetgrass	60	Sta.	Velvetgrass, German	40	Sta.
New Mexico	Barnyardgrass	2	Sta.	Crabgrass	2	Sta.	Dandelions	20	Sta.	Knotweed	5	Sta.	Rescuegrass	5	Sta.
Oregon	Bluegrass, annual	50	Sta.	Dandelion	60	Sta.	Dock	60	Sta.	Plantain, buckhorn	60	Sta.	Velvetgrass	30	Sta.
Utah	Bentgrass, rough	5	Up	Chickweed, mousear	10	Up	Crabgrass, large	30	Up	Dandelion	80	Up	Quackgrass	20	Up
Washington	Bluegrass, annual	25	Up	Dandelion	80	Sta.	Medic, black	40	Sta.	Plantain	50	Down	Speedwall	25	Up
Wyoming	Bellflower, creeping	25	Sta.	Chickweed	60	Down	Dandelion	80	Down	Knotweed, prostrate	25	Sta.	Yarrow	25	Sta.
Alaska	Bluegrass, annual	--	--	Chickweed	--	--	Dandelion	--	--	Knotweed	--	--	Plantain	--	--
Hawaii	Beggarweed, threefl. 3/	25	Up	Crabgrass, Henry	30	Sta.	Nutsedge, purple	30	Sta.	Stargrass, Australian	30	Up	Woodsorrel, creeping	15	Sta.

1/ Sta., stationary.
2/ Reported as Onion, wild; and Garlic, wild.
3/ Beggarweed, three flower.

Table 148.--Other turf areas: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	2/	35	---	60.00	50.00	----	95	5
Delaware	4	5	2	8.00	6.00	12.00	75	25
Maryland	---	21	---	----	1.50	----	100	--
Massachusetts	5	5	---	40.00	20.00	----	75	25
New Hampshire	1	2	---	30.00	20.00	----	50	50
Pennsylvania	3	103	2	50.00	16.00	66.00	65	35
West Virginia	---	10	---	----	7.00	----	50	50
Northeastern	13	181	4	31.69	20.27	39.00	74	26
Illinois	10	30	5	40.00	3.00	43.00	95	5
Iowa	50	100	15	10.00	2.00	12.00	95	5
Kansas	5	7	2	25.00	8.00	32.00	80	20
Minnesota	10	70	80	15.00	20.00	35.00	90	10
Ohio	30	200	20	60.00	15.00	75.00	20	80
South Dakota	1	2	---	20.00	4.00	----	80	20
North Central	106	409	122	28.25	11.62	39.01	64	36
Arkansas	2/	10	10	160.00	10.00	170.00	100	--
Florida	5	30	---	50.00	50.00	----	100	--
Georgia	50	100	---	10.00	3.00	----	90	10
Kentucky	5	10	---	50.00	10.00	----	90	10
Louisiana	4	---	---	30.00	----	----	90	10
Mississippi	5	8	12	40.00	20.00	35.00	90	10
North Carolina	5	5	2	40.00	15.00	45.00	80	20
Oklahoma	---	5	---	----	6.00	----	90	10
Tennessee	---	5	---	----	2.50	----	95	5
Texas	250	200	50	25.00	12.00	37.00	95	5
Virginia	---	90	---	----	35.00	----	70	30
Southern	324	463	74	23.98	16.91	54.86	91	9
California	14	16	5	45.00	18.00	53.00	70	30
Idaho	---	4	---	----	5.00	----	100	--
Montana	2	7	5	5.50	2.50	6.00	90	10
Nevada	2/	2/	---	20.00	8.00	----	5	95
New Mexico	---	1	---	----	5.50	----	90	10
Utah	1	3	---	10.00	3.00	----	80	20
Washington	4	4	---	7.00	5.00	----	10	90
Wyoming	---	2	---	----	5.00	----	75	25
Hawaii	1	5	1	20.00	30.00	40.00	50	50
Western	22	42	11	31.77	12.38	30.45	68	32
United States	465	1,095	211	25.54	15.32	44.12	78	22

1/ Includes herbicide equipment and labar for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 149.--Other turf areas: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Good	Good	---	Up	Some	No	---
Delaware	Good	Fair	Good	Up	Some	Yes	10
Maryland	---	Fair	---	Up	Some	No	---
Massachusetts	Good	Good	---	Up	Some	No	---
New Hampshire	Fair	Good	---	Up	Some	No	---
Pennsylvania	Good	Good	Good	Up	Some	No	---
West Virginia	---	Good	---	Up	Some	No	---
Northeastern	4-Good 1-Fair	5-Good 2-Fair	2-Good	7-Up	7-Some	1-Yes 6-No	1
Illinois	Fair	Fair	Fair	Up	Some	No	---
Iowa	Good	Good	Good	Up	Some	No	---
Kansas	Good	Fair	Fair	Up	Some	No	---
Minnesota	Good	Fair	Fair	Up	Urgent	No	---
Ohio	Good	Good	Good	Up	Some	No	---
South Dakota	Good	Good	---	Sta.	Some	No	---
North Central	5-Good 1-Fair	3-Good 3-Fair	2-Good 3-Fair	5-Up 1-Sta.	1-Urgent 5-Some	6-No	---
Arkansas	Good	Good	Good	Up	Some	No	---
Florida	Fair	Good	---	Up	Urgent	No	---
Georgia	Good	Good	---	Up	Some	No	---
Kentucky	Good	Good	--	Up	Some	No	---
Louisiana	Good	---	---	Up	Little	No	---
Mississippi	Good	Good	Good	Up	Some	No	---
North Carolina	Good	Good	Good	Up	Some	No	---
Oklahoma	---	Fair	---	Up	Some	No	---
Tennessee	---	Good	---	Up	Some	No	---
Texas	Good	Good	Good	Up	Some	No	---
Virginia	---	Fair	---	Up	Some	No	---
Southern	7-Good 1-Fair	8-Good 2-Fair	4-Good	11-Up	1-Urgent 9-Some 1-Little	11-No	---
California	Fair	Fair	Fair	Up	Urgent	Yes	30
Idaho	---	Fair	---	Up	Some	No	---
Montana	Fair	Good	Good	Up	Little	No	---
Nevada	Fair	Good	---	Up	Some	No	---
Utah	Poor	Fair	---	Up	Urgent	Yes	10
Washington	Good	Good	---	Up	Some	Yes	10
Wyoming	---	Good	---	Up	Some	No	---
Hawaii	Good	Good	Good	Up	Urgent	No	---
Western	2-Good 3-Fair 1-Poor	5-Good 3-Fair	2-Good 1-Fair	8-Up	3-Urgent 4-Some 1-Little	3-Yes 5-No	16
United States	18-Good 6-Fair 1-Poor	21-Good 10-Fair	10-Good 4-Fair	31-Up 1-Sta.	5-Urgent 25-Some 2-Little	4-Yes 28-No	1

1/ Sta., stationary.

Table 150.--Other turf areas: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 196[illegible]

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut----	Crabgrass----------	60	Down	Grasses, hay--------	30	Up	Hawkweed----------	25	Down	Quackgrass----------	75	Sta.	Spurge, Cypress-----	15	Down
Delaware-------	Bluegrass, annual---	50	Up	Crabgrass----------	25	Sta.	Goosegrass----------	15	Sta.	Knotweed----------	25	Sta.	Star-of-Bethlehem---	10	Up
Maine----------	Bluegrass, annual---	20	Up	Chickweed----------	5	Sta.	Dandelion----------	75	Sta.	Knotweed----------	5	Sta.	Plantain, buckhorn--	5	Sta.
Maryland------	Bluegrass, annual---	40	Up	Crabgrass----------	50	Sta.	Knotweed----------	40	Sta.	Nutsedge----------	30	Up	Plantain----------	30	Sta.
New Hampshire--	Crabgrass----------	60	Sta.	Dandelion----------	60	Down	Ivy, Poison---------	10	Sta.	Quackgrass----------	80	Down	Rocket, white-------	20	Up
New Jersey-----	Cinquefoil---------	20	Sta.	Dandelion----------	75	Up	Grasses, perennial--	60	Up	Knotweed----------	65	Sta.	Medic, black--------	30	Up
Pennsylvania---	Bluegrass, annual---	35	Up	Chickweed----------	40	Sta.	Crabgrass----------	60	Down	Dandelion----------	50	Down	Plantain----------	55	Down
Rhode Island---	Chickweed----------	98	Down	Crabgrass----------	98	Down	Dandelion----------	98	Down	Knotweed----------	98	Down	Plantain----------	98	Down
West Virginia--	Bluegrass, annual---	50	Sta.	Crabgrass----------	60	Sta.	Ivy, ground---------	30	Down	Nutsedge----------	20	Up	Spurge, spotted-----	15	Sta.
North Central:															
Illinois------	Bluegrass, annual---	25	Up	Clover, white------	75	Down	Crabgrass----------	70	Down	Knotweed, prostrate-	40	Down	Quackgrass----------	15	Sta.
Iowa----------	Brome, smooth-------	100	Sta.	Chickweed----------	100	Sta.	Dandelion, common---	100	Sta.	Fescus--------------	100	Sta.	Ivy, ground---------	100	Sta.
Kansas--------	Bindweed, field-----	10	Down	Crabgrass----------	40	Sta.	Foxtails-----------	5	Sta.	Morninglory--------	10	Down	Nutsedge----------	5	Sta.
Minnesota-----	Bentgrass----------	30	Sta.	Bluegrass, annual---	30	Sta.	Chickweed----------	30	Sta.	Crabgrass----------	50	Sta.	Dandelion----------	70	Sta.
Nebraska------	Bluegrass, annual---	10	Up	Crabgrass----------	70	Sta.	Dandelion----------	85	Sta.	Foxtails-----------	70	Sta.	Spurge, prostrate---	60	Up
North Dakota---	Brome, smooth-------	35	Sta.	Chickweed, common---	40	Sta.	Dandelion, common---	90	Sta.	Knotweed, prostrate-	20	Sta.	Quackgrass----------	50	Sta.
Ohio----------	Crabgrass----------	40	Sta.	Foxtails-----------	50	Sta.	Quackgrass----------	20	Sta.	Ragweed------------	60	Sta.	Thistle, Canada-----	25	Sta.
South Dakota---	Bromegralles--------	50	Sta.	Crabgrass----------	75	Sta.	Dandelion----------	100	Sta.	Ivy, ground---------	50	Sta.	Quackgrass----------	50	Sta.
Wisconsin-----	Chickweed, common---	80	Sta.	Chickweed, mouseear-	80	Sta.	Dandelion, common---	100	Down	Quackgrass----------	100	Sta.	Thistle, Canada-----	75	Down
Southern:															
Alabama-------	Bahiagrass----------	--	Up	Bluegrass, annual---	--	Up	Chickweed----------	--	Up	Garlic, wild--------	--	Up	Henbit--------------	--	Up
Arkansas------	Crabgrass, large --	95	Sta.	Dandelion, common---	50	Sta.	Henbit ------------	80	Sta.	Johnsongrass -------	20	Sta.	Plantain, buckhorn-	50	Sta.
Florida-------	Bluegrass, annual---	80	Up	Goosegrass----------	85	Down	Kyllinga, green-----	70	Down	Spurge, spotted-----	95	Up	Woodsorrel----------	30	Up
Georgia-------	Bahiagrass----------	40	Up	Crabgrass----------	50	Sta.	Dandelion----------	30	Sta.	Dock----------------	60	Up	Nutsedge----------	40	Up
Kentucky------	Bluegrass, annual---	--	Sta.	Chickweed----------	--	Up	Crabgrass----------	--	Up	Goosegrass ---------	--	Up	Plantain----------	--	Sta.
Louisiana-----	Bluegrass, annual---	85	Sta.	Chickweed----------	90	Up	Crabgrass----------	85	Sta.	Dallisgrass---------	70	Up	Goosegrass----------	70	Sta.
Mississippi----	Chickweed----------	35	Up	Clovers------------	40	Sta.	Crabgrass----------	75	Down	Dallisgrass---------	60	Sta.	Nutsedge----------	35	Up
North Carolina-	Chickweed----------	50	Sta.	Crabgrass----------	80	Sta.	Dandelion----------	70	Up	Docks---------------	30	Up	Plantains----------	40	Sta.
Oklahoma------	Chickweed----------	--	--	Crabgrass----------	--	--	Dandelion----------	--	--	Henbit--------------	--	--	Sandburs----------	--	--
South Carolina-	Bluegrass, annual---	50	--	Chickweed----------	40	--	Crabgrass----------	95	--	Garlic, wild--------	50	--	Henbit--------------	50	--
Tennessee-----	Crabgrass----------	85	Up	Dandelion----------	30	Sta.	Garlic, wild--------	75	Up	Goosegrass----------	60	Sta.	Paspalum----------	50	Up
Texas---------	Bluegrass, annual---	20	Sta.	Burclover----------	40	Up	Dallisgrass---------	60	Sta.	Dandelion----------	20	Up	Ivy, ground---------	10	Sta.
Virginia------	Bluegrass, annual---	5	Up	Goosegrass----------	5	Up	Ivy, ground---------	5	Up	Knotweed, prostrate	5	Up	Speedwells----------	5	Up
Western:															
Arizona-------	Bermudagrass--------	80	Sta.	Mustards-----------	50	Sta.	Nutsedge----------	25	Up	Puncturevine--------	50	Sta.	Thistle, Russian----	50	Sta.
California-----	Bluegrass,annual----	50	Up	Crabgrass----------	50	Down	Daisy, English------	20	Up	Dallisgrass---------	20	Up	Kikuyugrass---------	20	Up
Colorado------	Bentgrass----------	--	--	Crabgrass----------	--	--	Fescue--------------	--	--	-------------------	--	--	-------------------	--	--
Idaho----------	Bluegrass, annual---	25	Up	Dandelion----------	30	Sta.	Filaree-------------	5	Up	Plantain, broadleaf-	70	Sta.	Quackgrass----------	10	Sta.
Montana--------	Bluegrass, annual---	15	Up	Chickweed----------	25	Up	Dandelion----------	75	Down	Medic, black--------	20	Up	Plantain----------	60	Down
Nevada---------	Bluegrass, annual---	50	Sta.	Fescue, tall--------	40	Sta.	Nimblewill----------	30	Sta.	Velvetgrass---------	30	Sta.	Velvetgrass, German-	15	Sta.
New Mexico-----	Barnyardgrass-------	10	Sta.	Dandelion----------	4	Sta.	Johnsongrass--------	15	Sta.	Kochia--------------	15	Sta.	Rescuegrass---------	5	Sta.
Oregon---------	Bluegrass, annual---	60	Sta.	Dandelion----------	60	Sta.	Plantain, buckhorn--	90	Sta.	Ryegrass------------	30	Sta.	Velvetgrass---------	30	Sta.
Utah-----------	Bluegrass, annual---	20	Sta.	Chickweed, mouseear-	15	Sta.	Crabgrass----------	15	Up	Dandelion----------	80	Sta.	Plantain----------	30	Sta.
Washington-----	Bluegrass, annual---	25	Up	Dandelions ---------	80	Sta.	Medic, black -------	40	Sta.	Plantain----------	50	Down	Speedwell----------	25	Up
Wyoming--------	Crabgrass----------	10	Down	Dandelion----------	80	Down	-------------------	--	--	-------------------	--	--	-------------------	--	--
Hawaii---------	Crabgrass, Henry----	30	Up	Dropseed, Indian----	30	Sta.	Fingergrass, swollen	25	Up	Paspalum, sour------	30	Up	Stargrass, Australian	50	Up

1/ Sta., stationary.

HAY

(See General Limitations)

Thirty-seven States reported that about 1.3 million acres were sprayed for weed control during 1968. This was a slight increase over the acreage that had been reported sprayed during 1965. Of the total acreage sprayed during 1968, 76 percent was treated by farmers, while the remaining 24 percent was treated by custom operators. Nineteen States reported the effectiveness of postemergence herbicides to be fair or poor. Sixteen reported good effectiveness. Thirty-two States indicated a need for better herbicides with hay crops (tables 1 through 7, 151, and 152).

A wide range of weeds were serious problems to hay crops. Although some weeds were found to be widely scattered (tables 153 and 154), weeds in general tended to be regional in distribution. Some of the species of weeds that had a wide distribution were: quackgrass, 13 States; thistles, 12; chickweed, 11; dandelions, 8; and weed bromes, 8. Pigweeds and other amaranths, sandburs, rockets, and ragweeds were each reported by 7 States, while docks were reported by 6 States.

There is a need for much more research on the control of weeds in hay crops than is currently underway. Methods for the control of many of the weeds listed here are inadequate.

Table 151.--Hay: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	1	5	1	11.00	7.00	18.00	80	20
Delaware	1	2	1	8.00	5.00	13.00	75	25
Maine	---	10	---	---	8.00	---	75	25
Maryland	5	70	5	9.00	2.35	11.35	90	10
Massachusetts	2	5	1	12.00	4.00	15.00	75	25
New Jersey	---	15	---	---	10.00	---	90	10
New York	---	90	---	---	6.00	----	80	20
Pennsylvania	---	81	---	---	4.75	----	75	25
Rhode Island	2/	1	---	12.00	6.00	---	75	25
Vermont	---	1	---	---	4.00	---	50	50
West Virginia	20	15	30	9.00	3.00	12.00	90	10
Northeastern	29	295	38	9.24	4.88	12.18	83	17
Iowa	---	50	---	---	5.00	---	60	40
Minnesota	5	10	5	8.00	6.00	14.00	90	10
Ohio	---	6	---	---	2.50	---	90	10
South Dakota	---	85	---	---	1.50	---	50	50
Wisconsin	---	4	---	---	1.45	---	80	20
North Central	5	155	5	8.00	2.96	14.00	60	40
Alabama	5	5	---	7.00	3.00	---	95	5
Kentucky	16	20	---	13.00	2.00	---	75	25
Mississippi	50	15	60	5.00	3.00	7.00	90	10
North Carolina	5	5	---	7.00	2.50	---	80	20
Oklahoma	15	60	---	6.50	2.50	---	85	15
South Carolina	3	10	13	10.00	2.50	12.50	65	35
Tennessee	---	2	30	---	2.50	10.00	50	50
Texas	50	40	---	7.00	3.00	---	50	50
Virginia	1	90	---	12.50	4.80	---	70	30
Southern	145	247	103	7.02	3.43	8.57	73	27
Arizona	1	---	---	8.00	---	---	80	20
California	10	60	10	9.00	17.50	23.00	75	25
Idaho	2/	10	---	6.50	5.00	---	25	75
Montana	2	1	---	4.00	3.00	---	100	---
Nevada	1	7	---	8.00	4.00	---	20	80
New Mexico	2	2	---	8.50	3.80	---	100	---
Oregon	5	20	---	4.00	10.00	---	90	10
Utah	2	---	---	6.00	---	---	50	50
Washington	---	120	---	---	4.00	---	90	10
Wyoming	---	1	---	---	2.00	---	100	---
Alaska	---	2/	---	---	4.00	---	100	---
Hawaii	2/	2/	---	---	20.00	---	100	---
Western	23	221	10	7.09	8.24	23.00	80	20
United States	202	918	156	7.37	4.97	10.55	76	24

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 152.--Hay: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Good	Good	Good	Sta.	Some	No	---
Delaware	Good	Good	Good	Sta.	Some	No	---
Maine	---	Fair	---	Sta.	Some	No	---
Maryland	Good	Fair	Good	Up	Some	No	---
New Jersey	---	Fair	---	Sta.	Little	No	---
New York	---	Fair	---	Up	Urgent	Yes	---
Pennsylvania	---	Good	---	Up	Urgent	No	---
Rhode Island	Good	Fair	---	Sta.	Some	No	---
Vermont	---	Fair	---	Sta.	Urgent	No	---
West Virginia	Fair	Fair	Fair	Up	Urgent	Yes	10
Northeastern	4-Good 1-Fair	3-Good 7-Fair	3-Good 1-Fair	4-Up 6-Sta.	4-Urgent 5-Some 1-Little	2-Yes 8-No	2
Iowa	---	Good	---	Up	Little	No	---
Minnesota	Fair	Fair	Fair	Up	Urgent	Yes	1
Ohio	---	Good	---	Sta.	Some	No	---
South Dakota	---	Fair	---	Up	Some	No	---
Wisconsin	---	Poor	---	Sta.	Urgent	No	---
North Central	1-Fair	2-Good 2-Fair 1-Poor	1-Fair	3-Up 2-Sta.	2-Urgent 2-Some 1-Little	1-Yes 4-No	---
Alabama	Good	Good	---	Up	Some	No	---
Kentucky	Good	Good	---	Up	Some	No	---
Mississippi	Good	Good	Good	Up	Little	No	---
North Carolina	Good	Good	---	Up	Some	No	---
Oklahoma	Good	Fair	---	Up	Some	No	---
South Carolina	Good	Good	Good	Down	Some	No	---
Tennessee	---	Fair	---	Sta.	Some	No	---
Texas	Good	Good	Good	Up	Some	No	---
Virginia	Fair	Fair	---	Up	Some	No	---
Southern	7-Good 1-Fair	6-Good 3-Fair	3-Good	7-Up 1-Sta. 1-Down	8-Some 1-Little	9-No	---
Arizona	Good	Fair	---	Sta.	Some	No	---
California	Fair	Good	Fair	Up	Urgent	No	---
Idaho	Fair	Fair	---	Up	Some	No	---
Montana	Fair	Fair	---	Up	Some	No	---
Nevada	Fair	Good	---	Up	Some	No	---
New Mexico	Good	Good	---	Sta.	Some	No	---
Oregon	Fair	Fair	---	Up	Little	No	---
Utah	Good	---	---	Up	Urgent	Yes	100
Washington	---	Good	---	Up	Some	Yes	60
Wyoming	---	Good	---	Sta.	Urgent	No	---
Alaska	---	Fair	---	Sta.	Some	No	---
Hawaii	---	Poor	---	Down	Urgent	No	---
Western	3-Good 5-Fair	5-Good 5-Fair 1-Poor	1-Fair	7-Up 4-Sta. 1-Down	4-Urgent 7-Some 1-Little	2-Yes 10-No	29
United States	14-Good 8-Fair	16-Good 17-Fair 2-Poor	6-Good 3-Fair	21-Up 13-Sta. 2-Down	10-Urgent 22-Some 4-Little	5-Yes 31-No	6

1/ Sta., stationary.

Table 153.--Hay: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in the crop]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Alyssum, hoary	2	--	2	--	--	1	398	1	2,024	--	---	2,422
Arrowgrass	1	--	--	--	1	--	---	1	118	--	---	118
Bahiagrass	1	--	--	1	--	--	---	1	73	--	---	73
*Barley	6	--	--	1	5	4	1,077	2	662	--	---	1,739
Barnyardgrass	2	--	1	--	1	--	---	1	196	1	14	210
Bedstraw	1	1	--	--	--	--	---	1	(1/)	--	---	(1/)
Bermudagrass	1	--	--	--	1	--	---	1	(2/)	--	---	(2/)
Bindweeds	2	1	1	--	--	1	88	--	---	1	13	101
Blackberry	1	--	--	1	--	--	---	--	---	1	73	73
*Bromes 3/	8	--	3	--	5	6	2,860	1	290	1	155	3,305
Caraway	2	--	--	--	2	--	---	1	118	1	110	228
Carrot, wild	1	1	--	--	--	--	---	--	---	1	40	40
*Chickweeds	11	6	1	3	1	9	1,879	2	316 1/	--	---	2,195 1/
Chicory	1	--	--	1	--	1	53	--	---	--	---	53
Cockle	5	2	3	--	--	1	87	4	4,956	--	---	5,043
Cocklebur	1	--	--	1	--	1	64	--	---	--	---	64
Crabgrasses	4 4/	--	1	3	--	1	1,005	--	---	2	1,532	2,537
Crotalaris	1	--	--	1	--	1	3	--	---	--	---	3
Croton	1	--	--	1	--	--	---	1	91	--	---	91
Daisies	2	2	--	--	--	--	---	1	12	1	13	25
*Dandelions	9	4	--	--	5	2	262	6	1,786	1	353	2,401
Docks	6	1	1	4	--	5	347	1	45	--	---	392
Dodder	3	--	--	1	2	3	190	--	---	--	---	190
Dogfennel	1	--	--	1	--	1	8	--	---	--	---	8
Fescue, rattail	1	--	--	--	1	1	102	--	---	--	---	102
Fiddleneck, Douglas-	1	--	--	--	1	1	559	--	---	--	---	559
Fingergrass, feather	1	--	--	--	1	1	(2/)	--	---	--	---	(2/)
Fleabanes	2	--	--	2	--	2	698	--	---	--	---	698
Flixweed	1	--	--	--	1	--	---	1	174	--	---	174
Foxtails	5	--	4	1	--	3	1,824	2	2,924	--	---	4,748
Gromwell, corn	1	--	--	1	--	--	---	1	53	--	---	53
Henbit	5	1	--	4	--	3	637	1	316	1	475	1,428
Horsenettle	2	--	--	2	--	--	---	2	229	--	---	229
Horsetail	1	--	--	--	1	--	---	1	3	--	---	3
*Johnsongrass	6 4/	--	--	4	2	1	36	2	289	2	727	1,052
Kikuyugrass	1	--	--	--	1	1	(2/)	--	---	--	---	(2/)
Knapweed, Russian	1	--	--	--	1	1	53	--	---	--	---	53
Knawel	1	1	--	--	--	1	7	--	---	--	---	7
Kochia	2	--	1	--	1	--	---	2	1,174	--	---	1,174
Lambsquarters	1	--	1	--	--	1	828	--	---	--	---	828
Milkweed	1	--	1	--	--	--	---	1	221	--	---	221
Mustards	4	2	1	--	1	4	2,074	--	---	--	---	2,074
Nightshade, apple-of-Sodom	1	1	--	--	--	1	7	--	---	--	---	7
Oat, wild	1	--	--	--	1	1	72	--	---	--	---	72
Panicums	2	1	1	--	--	--	---	2	135	--	---	135

See footnotes at end of table.

Table 153.--Hay: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968--continued

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							1,000 acres		1,000 acres		1,000 acres	1,000 acres
Pennycress	1	--	1	--	--	--	---	1	810	--	---	810
Pepperweeds	2	2	--	--	--	1	58	1	296	--	---	354
*Pigweeds	7 4/	1	1	3	2	5	1,389 2/	--	---	1	1,188	2,577 2/
Plantains	3	1	--	1	1	2	659	--	---	1	(1/)	659 1/
Poorjoe	1	--	--	1	--	1	47	--	---	--	---	47
Puncturevine	1 4/	--	--	1	--	--	---	--	---	--	---	---
*Quackgrass	13	3	6	--	4	9	7,800	3	273	1	54	8,127
Radish, wild	1	1	--	--	--	1	4	--	---	--	---	4
*Ragweeds	7 4/	--	2	5	--	5	2,215	--	---	--	---	2,215
Rocket	7	5	2	--	--	2	1,326	4	2,150 1/	1	80	3,556 1/
Ryegrass	1	--	--	--	1	1	305	--	---	--	---	305
*Sandburs	7 4/	--	--	5	2	2	95	3	137 2/	1	475	707 2/
Shepherdspurse	4	1	--	--	3	2	1,040	2	684	--	---	1,724
Sicklepod	1	--	--	1	--	1	5	--	---	--	---	5
Signalgrass	1 4/	--	--	1	--	--	---	--	---	--	---	---
Smartweeds	2	--	2	--	--	1	802	--	---	1	172	974
Smutgrass	1	--	--	1	--	--	---	1	130	--	---	130
Sneezeweed, bitter	2	--	--	2	--	--	---	2	444	--	---	444
Speedwells	1	1	--	--	--	--	---	1	51	--	---	51
Starthistles	1	--	--	--	1	1	746	--	---	--	---	746
Tansymustard	3	--	--	--	3	2	638	--	---	1	22	660
Tarweed, common	1	--	--	--	1	1	559	--	---	--	---	559
*Thistles	12	1	6	3	2	6	581	6	2,379	--	---	2,960
Turnip, wild	1	1	--	--	--	1	102	--	---	--	---	102
Watergrass (complex)	1	--	--	--	1	1	143	--	---	--	---	143
Whitetop	2	--	--	--	2	2	163	--	---	--	---	163
Yankeeweed	1	--	--	1	--	--	---	1	159	--	---	159

1/ No acreages estimated for weeds reported in West Virginia.
2/ Less than 500 acres estimated for weeds reported in Hawaii.
3/ Includes cheat and chess.
4/ Weeds reported in Mississippi and Oklahoma not classified by trend or area of infestation; included in total and regional frequency counts only.

Table 154.--Hay: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Chickweed	50	Sta.	Mustards	60	Sta.	Pepperweed	50	Sta.	Pigweeds	80	Sta.	Quackgrass	80	Sta.
Delaware	Knawel	20	Sta.	Nightshade, apple-of- 2/	20	Sta.	Panicum, fall	15	Up	Radish, wild	10	Sta.	----------	--	--
Maine	Dandelion	30	Up	Rocket, yellow	15	Up	----------	--	--	----------	--	--	----------	--	--
Maryland	Chickweed	80	Sta.	Dandelion	60	Up	Henbit	30	Sta.	Mustard, wild	60	Sta.	Rocket, yellow	25	Up
New Hampshire	Bindweed	10	Down	Carrot, wild	30	Down	Daisy	10	Down	Quackgrass	40	Down	Rocket	60	Down
New Jersey	Chickweed	60	Sta.	Cockle, corn	60	Sta.	Dandelion	75	Up	Speedwell	35	Up	Turnip, wild	70	Sta.
Pennsylvania	Chickweed	40	Sta.	Dandelion	30	Up	Pepperweed, field	15	Up	Rocket, yellow	35	Sta.	Shepherdspurse	20	Up
Rhode Island	Chickweed	80	Sta.	Daisy	90	Up	Dock, curly	50	Sta.	Quackgrass	75	Sta.	Thistle	75	Up
West Virginia	Bedstraws	--	Up	Chickweed	--	Up	Cockle, white	--	Up	Plantains	--	Down	Rocket, yellow	--	Up
North Central:															
Illinois	Barnyardgrass	15	Up	Chickweed	3	Sta.	Panicum, fall	10	Up	Quackgrass	10	Sta.	Thistle, Canada	10	Sta.
Indiana	Brome, downy	16	Down	Dock, curly	4	Sta.	Foxtail, giant	20	Sta.	Quackgrass	5	Sta.	Thistle, Canada	10	Sta.
Iowa	Foxtails	30	Sta.	Ragweed, common	30	Sta.	Smartweed, Pa.	30	Sta.	----------	--	--	----------	--	--
Michigan	Alyssum, hoary	25	Sta.	Cockle, white	30	Up	Rocket, yellow	40	Sta.	Thistle, Canada	10	Sta.	----------	--	--
Minnesota	Cockle, white	25	Up	Foxtails	80	Up	Mustard	50	Sta.	Quackgrass	75	Sta.	Thistle, Canada	50	Up
North Dakota	Foxtails	25	Sta.	Kochia	35	Up	Lambsquarters, common	25	Sta.	Pigweed, redroot	35	Sta.	Quackgrass	20	Sta.
Ohio	Crabgrass	30	Down	Quackgrass	15	Sta.	Ragweed	50	Sta.	Smartweed	15	Down	Thistle, Canada	30	Up
South Dakota	Bindweed, field	2	Sta.	Brome, downy	10	Sta.	Brome, Japanese	10	Sta.	Milkweed	5	Up	Thistle, Canada	1	Sta.
Wisconsin	Alyssum, hoary	50	Up	Cockle, white	90	Up	Pennycress, field	20	Up	Quackgrass	100	Sta.	Rocket, yellow	50	Up
Southern:															
Alabama	Bahiagrass	15	Up	Barley, little	15	Up	Blackberry	15	Down	Horsenettle	20	Up	Sandbur	15	Up
Arkansas	Chickweed	60	Sta.	Croton	12	Up	Dock	6	Up	Henbit	60	Sta.	Sneezeweed, bitter	30	Up
Florida	Crotalaria	2	Sta.	Dogfennel	5	Sta.	Ragweed	10	Sta.	Sicklepod	3	Sta.	Thistle, bull	6	Up
Georgia	Dock	20	Sta.	Johnsongrass	30	Up	Sandbur	20	Sta.	Smutgrass	30	Up	Sneezeweed, bitter	50	Up
Louisiana	Cocklebur	20	Sta.	Johnsongrass	50	Up	Pigweed	20	Sta.	Sandburs	20	Up	Yankeeweed	50	Up
Mississippi	Crabgrass	--	--	Ragweed	--	--	Signalgrass	--	--	----------	--	--	----------	--	--
North Carolina	Chickweed	40	Sta.	Dock	25	Sta.	Henbit	20	Sta.	Horsenettle	30	Up	Thistle	5	Sta.
Oklahoma	Johnsongrass	--	--	Pigweed	--	--	Puncturevine	--	--	Ragweed	--	--	Sandbur	--	--
South Carolina	Dodder	30	Sta.	Fleabane	30	Sta.	Plantain	30	Sta.	Poorjoe	20	Sta.	Ragweed	30	Sta.
Tennessee	Crabgrass	80	Sta.	Fleabane	50	Sta.	Foxtails	20	Up	Ragweed	60	Sta.	Thistles	10	Up
Texas	Crabgrass	50	Down	Henbit	20	Down	Johnsongrass	30	Down	Pigweed	50	Down	Sandbur	20	Down
Virginia	Chickweed	30	Up	Chicory	5	Sta.	Dock, curly	10	Sta.	Cromwell, corn	5	Up	Henbit	30	Up
Western:															
Arizona	Johnsongrass	15	Sta.	Mustards	60	Sta.	Oat, wild	30	Sta.	Pigweed	30	Sta.	Watergrass	60	Sta.
California	Chess, soft	50	Sta.	Fiddleneck, Douglas-	30	Sta.	Starthistle, yellow-	40	Sta.	Tansymustard	20	Sta.	Tarweed, common	30	Sta.
Idaho	Brome, downy	20	Sta.	Dandelion	20	Sta.	Quackgrass	10	Sta.	Shepherdspurse	60	Sta.	Thistle, Canada	10	Sta.
Montana	Barley, wild	5	Sta.	Caraway	5	Down	Dandelion	30	Up	Thistle, Canada	10	Up	Whitetop	5	Sta.
Nevada	Dodder	5	Sta.	Knapweed, Russian	15	Sta.	Whitetop	15	Sta.	----------	--	--	----------	--	--
New Mexico	Barnyardgrass	5	Down	Johnsongrass	5	Down	Kochia	5	Up	Sandbur	3	Sta.	Tansymustard	8	Down
Oregon	Barley, foxtail	60	Sta.	Cheat	60	Sta.	Dodder	10	Sta.	Fescue, rattail	10	Sta.	Ryegrass	30	Sta.
Utah	Brome, downy	50	Up	Dandelion	25	Up	Flixweed	30	Up	Quackgrass	25	Up	Shepherdspurse	50	Up
Washington	Barley, wild	40	Sta.	Brome, downy	20	Sta.	Dandelion	40	Down	Shepherdspurse	30	Sta.	Tansymustard	30	Sta.
Wyoming	Arrowgrass	10	Up	Barley, foxtail	50	Up	Caraway	10	Up	Plantain	50	Sta.	Quackgrass	10	Up
Alaska	Barley, foxtail	30	Sta.	Chickweed	100	Sta.	Dandelion	30	Sta.	Horsetail	20	Up	Quackgrass	80	Up
Hawaii	Amaranth, spiny	10	Sta.	Bermudagrass	10	Up	Fingergrass, feather	45	Sta.	Kikuyugrass	5	Sta.	Sandbur, southern	40	Up

1/ Sta., stationary.
2/ Nightshade, apple-of-Sodom.

GRAZING LAND

(See General Limitations)

Approximately 940 million acres of land are grazed in the United States --about 310 million acres of pastures and 630 million acres of rangelands. Weeds and brush are found in almost all of this area, but constitute a problem in only about one-half to three-fourths of it.

Over 9 million acres of grazing land were sprayed by herbicides during 1968 at a cost of $36.4 million. Farmers or ranchers sprayed only 17 percent of this acreage of rangelands with their own equipment, but treated 74 percent of the pasture acreage. Custom sprayers treated the remainder in each case.

The cost of spraying rangeland is higher than the cost for pastures, mainly because relatively more brush species on rangelands were sprayed with 2,4,5-T. Less expensive 2,4-D is effective on many pasture species and is more commonly used on pastures. Also, the rate of herbicide required for the control of brush is usually higher than that needed for the control of herbaceous weeds (tables 1 through 7 and 155 through 175).

To provide more meaningful information on weed and brush species, the grazing land areas have been classified as follows: annual pastures, perennial improved pastures, perennial unimproved pastures, mountain rangeland, foothill or prairie rangeland, arid rangeland, and rainbelt rangeland. Tables for the individual grazing land areas are grouped at the end of the discussion (see pages 181 through 199).

GRAZING LAND--PASTURES

(See General Limitations)

The 10 weeds or weed complexes that were reported most frequently in pasture areas (in order of decreasing frequency) were: thistles (excluding Russian thistle), ragweeds, docks, pigweeds and other amaranths, horsenettle, wild barley species, crabgrasses, dandelions, buttercups, and wild garlic (tables 157, 160, and 163).

Annual Pastures

Although 18 States submitted reports on annual pastures, most of the acreage that was treated with herbicides was in Iowa (table 155). A very limited amount of herbicides was applied preemergence for annual pastures. Over 97 percent of this acreage was treated postemergence. Only seven out of 17 States considered postemergence treatments good, while 14 States reported some need or urgent need for better herbicides (table 156). The species of weeds listed among the five most important by the various States are shown in table 157. Only a few perennial and biennial species were listed as being serious problems for annual pastures.

Perennial Improved Pastures

Data on the extent, costs, and use of herbicides in perennial improved pastures are given in tables 158 and 159. The perennial improved pastures are characterized as having a high proportion of perennial weed species listed as most important problems (table 160). Those species that were mentioned most frequently were: Canada thistle (15 States); other thistles, mostly biennial (17); quackgrass (11); ragweeds (11); horsenettle (10); docks (10); and dandelions (9).

Perennial Unimproved Pastures

Data on the extent, costs, and use of herbicides in perennial unimproved pastures are given in tables 161 and 162. Perennial unimproved pastures are also characterized by having a preponderance of perennial weeds listed as the most important (table 163). A number of annual weeds are notably important also. Species listed most frequently were: Canada thistle (6 States); other thistles (10); broomsedge (5); ragweeds and goldenrods (4 each); and dock, ironweed, and weed bromes (3 each).

The high percentage of pasture acreage infested by many of the species listed in table 163 indicated a high potential acreage for use of any improved method of control that may be developed.

GRAZING LAND--RANGELANDS

(See General Limitations)

The 10 weeds or weed complexes that were reported most frequently for all rangelands (in order of decreasing frequency) were: sagebrushes, weed bromes, larkspurs, thistles, pricklypear, rabbitbrush, spurges, juniper species, medusahead, and mesquite (tables 166, 169, 172, and 175).

Mountain Rangeland

Fourteen States submitted reports on the extent, costs, and use of herbicides and weed problems on mountain rangeland. Some of the more serious weed problems mentioned were: larkspur species (7 States), sagebrush species (6), Canada thistle (6), hellebore, mulesears, leafy spurge, and junipers (3 each). Woody plants, other than the sagebrush species, were listed among the five most important weeds on rangelands in 11 States (tables 164, 165, and 166).

Foothill (Prairie) Rangeland

Sixteen States submitted reports on the extent, costs, and use of herbicides and weed problems on the foothill and prairie ranges. Species of sagebrush were mentioned most often among the five most important weeds within the States reporting. The next most frequently mentioned were the weed bromes. Other species mentioned by many States included juniper species, larkspurs,

spotted knapweed, and rabbitbrush. Other brush species were mentioned by 13 States.

Because of the extensive acreages involved and the high percentage of infestation, many of the difficult-to-kill species warrant increased attention in research. On the other hand, species such as sagebrushes, which are found on extensive acreage, probably should command only low priority in research because efficient and effective methods for their control have been developed (tables 167, 168, and 169).

Arid Rangeland

Ten States submitted reports on the extent, costs, and use of herbicides on arid rangeland. Twelve States reported on their weed problems. Vast acreages are included in the arid rangeland class. The vegetation on these rangelands consists mostly of species of low grazing value, whose replacement by more useful forage on the more favorable sites would improve carrying capacity. Weeds listed most frequently in the 12 States reporting included: pricklypear and other cacti (5 States), downy brome and rabbitbrush (4 each), and sagebrush, mesquite, juniper, and halogeton (3 each) (tables 170, 171, and 172).

Rainbelt Rangeland

Two Southern and three Western States submitted reports on herbicide useage and the most important weed and brush problems in rainbelt rangelands. Sixteen of the species listed were woody plants, while eight were herbaceous. Many species were not efficiently controlled by herbicides now registered for use on grazing lands (tables 173, 174, and 175).

Table 155.--Annual pastures: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	---	2/	---	----	8.00	----	100	--
Massachusetts	1	1	----	10.00	4.00	----	75	25
New Hampshire	2/	---	---	6.00	----	----	80	20
Pennsylvania	---	8	---	----	6.00	----	90	10
Vermont	---	2/	---	----	4.00	----	25	75
Northeastern	1	9	---	10.00	5.78	----	87	13
Iowa	---	500	---	----	2.50	----	75	25
Minnesota	---	5	---	----	2.00	----	100	--
South Dakota	---	15	---	----	1.35	----	50	50
North Central	---	520	---	----	2.46	----	75	25
Alabama	---	2	---	----	3.00	----	100	--
Florida	---	2	---	----	4.00	----	100	--
Louisiana	15	10	---	6.00	4.00	----	90	10
Mississippi	---	25	---	----	2.00	----	100	--
North Carolina	---	10	---	----	2.50	----	100	--
South Carolina	---	1	---	----	1.00	----	65	35
Tennessee	---	2	---	----	2.50	----	95	5
Texas	---	2/	---	----	2.50	----	40	60
Virginia	---	2/	---	----	3.25	----	100	--
Southern	15	52	---	6.00	2.60	----	95	5
California	1	10	---	6.00	3.50	----	70	30
Western	1	10	---	6.00	3.50	----	70	30
United States	17	591	---	6.24	2.54	----	77	23

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 156.--Annual pastures: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	---	Good	---	Sta.	Little	No	---
New Hampshire	Good	---	---	Sta.	Some	No	---
Pennsylvania	---	Good	---	Up	Some	No	---
Vermont	---	Good	---	Up	Some	No	---
Northeastern	1-Good	3-Good	---	2-Up 2-Sta.	3-Some 1-Little	4-No	---
Iowa	---	Good	---	Sta.	Little	No	---
Minnesota	Fair	---	---	Up	Some	No	---
South Dakota	---	Fair	---	Up	Some	No	---
North Central	1-Fair	1-Good 1-Fair	---	2-Up 1-Sta.	2-Some 1-Little	3-No	---
Alabama	---	Fair	---	Up	Some	No	---
Florida	---	Fair	---	Sta.	Some	No	---
Louisiana	Fair	Fair	---	Up	Urgent	No	---
Mississippi	---	Fair	---	Sta.	Some	No	---
North Carolina	---	Good	---	Sta.	Some	No	---
South Carolina	---	Good	Good	Sta.	Some	No	---
Tennessee	---	Fair	---	Up	Some	No	---
Texas	---	Good	---	Up	Some	No	---
Virginia		Fair	---	Sta.	Little	No	---
Southern	1-Fair	3-Good 6-Fair	1-Good	4-Up 5-Sta.	1-Urgent 7-Some 1-Little	9-No	---
California	Fair	Fair	---	Sta.	Some	No	---
Western	1-Fair	1-Fair	---	1-Sta.	1-Some	1-No	---
United States	1-Good 3-Fair	7-Good 8-Fair	1-Good	8-Up 9-Sta.	1-Urgent 13-Some 3-Little	17-No	---

1/ Sta., stationary.

Table 157.--Annual pastures: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 196[illegible]

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Barnyardgrass	40	Sta.	Lambsquarters	50	Sta.	Panicum, fall	30	Up	Pigweed, redroot	70	Sta.	Smartweed	25	Sta.
Pennsylvania	Lambsquarters	16	Down	Pigweed, redroot	15	Down	Plantain	10	Down	Ragweed	12	Down	----------	--	--
Rhode Island	Barnyardgrass	90	Up	Panicum	90	Sta.	Quackgrass	50	Up	Radish, wild	75	Up	Ragweed	50	Sta.
Vermont	Foxtail	30	Sta.	Grasses, annual	20	Up	Lambsquarters	40	Sta.	Pigweed, redroot	40	Sta.	Ragweed	40	Sta.
North Central:															
Illinois	Cocklebur	5	Sta.	Foxtail, giant	30	Sta.	Lambsquarters	5	Sta.	Ragweed, common	10	Sta.	Thistle, Canada	10	Sta.
Iowa	Fleabane, daisy	40	Up	Jimsonweed	15	Up	Ragweed, common	90	Sta.	Thistle, musk	20	Up	Threeawn, prairie	50	Sta.
Minnesota	Barnyardgrass	60	Sta.	Lambsquarters	95	Sta.	Pigweed	95	Sta.	Quackgrass	60	Sta.	Ragweed	70	Sta.
South Dakota	Cocklebur	10	Sta.	Lambsquarters	15	Sta.	Pigweed	15	Sta.	Ragweed	15	Sta.	Sunflower	10	Sta.
Southern:															
Alabama	Chickweed	--	Sta.	Cocklebur	--	Sta.	Crabgrass	--	Sta.	Dock, curly	--	Up	Pigweed	--	Sta.
Arkansas	Crabgrass, large	50	Sta.	Croton	25	Sta.	Pigweed	30	Sta.	Ragweed	30	Sta.	----------	--	--
Florida	Cocklebur, common	10	Sta.	Crabgrass, large	8	Sta.	Pusley, Florida	5	Sta.	Ragweed, common	5	Sta.	Sicklepod	10	Sta.
Georgia	Crabgrass	90	Sta.	Johnsongrass	40	Up	Mustard	20	Up	Pigweed	60	Up	Pusley, Florida	50	Sta.
Mississippi	Dock	50	Up	Dodder	15	Up	Mustard, wild	25	Sta.	Onion	90	Up	----------	--	--
North Carolina	Buttercup	10	Up	Chickweed	40	Sta.	Dock	30	Sta.	Horsenettle	40	Up	Knawel	25	Sta.
South Carolina	Crabgrass	45	Sta.	Dock	20	Sta.	Horsenettle	25	Up	Pigweed	40	Up	Ragweed	35	Sta.
Tennessee	Cocklebur	15	Sta.	Crabgrass	90	Sta.	Lambsquarters	20	Up	Morningglory	20	Up	Pigweed	50	Up
Texas	Crabgrass	10	Sta.	Dock, curly	5	Sta.	Johnsongrass	15	Sta.	Panicum, browntop	20	Sta.	Pigweed	10	Sta.
Western:															
California	Foxtail, yellow	20	Sta.	Jimsonweed	10	Sta.	Pigweed, redroot	40	Sta.	----------	--	--	----------	--	--
Oregon	Bluegrass, annual	20	Up	Medusahead	10	Up	Puncturevine	10	Up	Sandbur	10	Up	Thistle, Russian	50	Up

1/ Sta., stationary.

Table 158.--Perennial improved pastures: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	---	1	---	----	8.00	----	90	10
Delaware	---	5	---	----	3.00	----	90	10
Maine	---	2	---	----	8.00	----	90	10
Maryland	---	20	---	----	2.00	----	100	--
Massachusetts	1	4	---	10.00	4.00	----	75	25
New Hampshire	1	---	---	5.50	----	----	70	30
New Jersey	---	12	---	----	2.00	----	85	15
New York	---	20	---	----	3.00	----	90	10
Pennsylvania	---	45	---	----	4.25	----	95	5
Rhode Island	2/	2/	---	9.00	8.00	----	75	25
Vermont	---	2/	---	----	8.00	----	50	50
West Virginia	---	20	---	----	6.00	----	80	20
Northeastern	2	129	---	7.75	3.80	----	91	9
Illinois	---	50	---	----	3.00	----	98	2
Iowa	---	500	---	----	1.50	----	95	5
Kansas	---	500	---	----	2.00	----	30	70
Minnesota	---	100	---	----	2.00	----	95	5
Ohio	---	45	---	----	1.75	----	90	10
South Dakota	---	25	---	----	1.50	----	50	50
North Central	---	1,220	---	----	1.82	----	67	33
Alabama	---	150	---	----	2.50	----	95	5
Arkansas	10	60	80	3.00	2.00	5.00	90	10
Florida	---	8	---	----	1.50	----	60	40
Georgia	---	343	---	----	3.00	----	80	20
Kentucky	---	100	---	----	2.00	----	95	5
Louisiana	---	100	---	----	3.00	----	90	10
Mississippi	100	100	20	5.00	2.00	6.50	80	20
North Carolina	10	100	---	7.50	2.50	----	100	--
Oklahoma	35	150	10	5.50	1.75	7.25	60	40
South Carolina	---	215	---	----	2.50	----	65	35
Tennessee	---	10	---	----	2.50	----	95	5
Texas	20	15	5	7.00	2.50	9.50	50	50
Virginia	---	100	---	----	4.50	----	100	---
Southern	175	1,451	115	5.36	2.62	5.65	81	19
California	---	50	---	----	3.50	----	70	30
Idaho	---	45	---	----	3.00	----	50	50
Montana	---	3	---	----	2.00	----	40	60
Nevada	---	1	---	----	1.00	----	50	50
Oregon	---	1	---	----	4.00	----	70	30
Utah	---	4	---	----	2.50	----	80	20
Washington	---	20	---	----	5.00	----	90	10
Wyoming	---	2	---	----	2.00	----	50	50
Hawaii	---	5	---	----	15.00	----	50	50
Western	---	131	---	----	3.89	----	65	35
United States	177	2,931	115	5.39	2.40	5.65	75	25

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 159.--Perennial improved pastures: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	---	Good	---	Sta.	Little	No	---
Delaware	---	Good	---	Sta.	Some	No	---
Maine	---	Good	---	Sta.	Some	No	---
Maryland	---	Good	---	Sta.	Some	No	---
New Hampshire	Good	---	---	Sta.	Some	No	---
New Jersey	---	Good	---	Sta.	Some	No	---
New York _/	---	Good	---	Up	Some	No	---
Pennsylvania	---	Good	---	Up	Some	No	---
Rhode Island	Good	Good	---	Up	Some	No	---
Vermont	---	Fair	---	Up	Some	No	---
West Virginia	---	Fair	---	Up	Urgent	No	---
Northeastern	2-Good	8-Good 2-Fair	---	5-Up 6-Sta.	1-Urgent 9-Some 1-Little	11-No	---
Illinois	---	Fair	---	Up	Some	No	---
Iowa	---	Good	Good	Up	Some	No	---
Kansas	---	Fair	---	Up	Some	No	---
Minnesota	---	Fair	---	Up	Some	No	---
Ohio	---	Fair	---	Sta.	Some	No	---
South Dakota	---	Fair	---	Up	Urgent	No	---
North Central	---	1-Good 5-Fair	1-Good	5-Up 1-Sta.	1-Urgent 5-Some	6-No	---
Alabama	---	Poor	---	Up	Urgent	No	---
Arkansas	Good	Good	Good	Up	Some	No	---
Florida	---	Fair	---	Sta.	Some	No	---
Georgia	---	Good	---	Up	Some	No	---
Kentucky	---	Fair	---	Up	Urgent	No	---
Louisiana	---	Good	---	Up	Some	No	---
Mississippi	Good	Good	Good	Up	Some	No	---
North Carolina	Good	Good	---	Sta.	Some	No	---
Oklahoma	Fair	Fair	Good	Up	Some	No	---
South Carolina	Good	Good	---	Sta.	Little	No	---
Tennessee	---	Fair	---	Sta.	Some	No	---
Texas	Good	Good	Good	Up	Some	No	---
Virginia	---	Fair	---	Sta.	Little	No	---
Southern	5-Good 1-Fair	7-Good 5-Fair 1-Poor	4-Good	8-Up 5-Sta.	2-Urgent 9-Some 2-Little	13-No	---
California	---	Fair	---	Up	Some	No	---
Idaho	---	Good	---	Up	Some	No	---
Montana	---	Fair	---	Up	Some	No	---
Nevada	---	Fair	---	Sta.	Some	No	---
Oregon	---	Good	---	Sta.	Some	No	---
Utah	---	Good	---	Sta.	Urgent	No	---
Washington	---	Good	---	Up	Some	No	---
Wyoming	---	Fair	---	Up	Some	No	---
Hawaii	---	Fair	---	Up	Urgent	No	---
Western	---	4-Good 5-Fair	---	6-Up 3-Sta.	2-Urgent 7-Some	9-No	---
United States	7-Good 1-Fair	20-Good 17-Fair 1-Poor	5-Good	24-Up 15-Sta.	6-Urgent 30-Some 3-Little	39-No	---

1/ Sta., stationary.

Table 160.--Perennial improved pastures: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1966

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Cockle, white	30	Sta.	Crabgrass	50	Sta.	Dandelion	50	Sta.	Quackgrass	50	Sta.	Thistles	15	Up
Delaware	Bermudagrass	5	Sta.	Nightshade, apple-of- 2/	50	Sta.		--	--		--	--		--	--
Maine	Dandelion	20	Sta.	Thistle	10	Sta.		--	--		--	--		--	--
Maryland	Buttercup	15	--	Garlic, wild	25	--	Horsenettle	10	--	Milkweed	10	--	Thistles	45	--
New Hampshire	Milkweed	5	Sta.	Mullein	10	Sta.	Nutsedge	10	Sta.	Quackgrass	60	Down	Thistle, Canada	20	Sta.
New Jersey	Horsenettle	15	Up	Jimsonweed	25	Up	Nightshade	20	Up	Pokeweed	10	Sta.	Thistle, Canada	45	Up
Pennsylvania	Buttercup	15	Sta.	Dandelion	25	Up	Garlic, wild	20	Sta.	Rocket, yellow	20	Sta.	Thistle, Canada	15	Up
Rhode Island	Bromegrasses, weedy-	60	Up	Chickweed	50	Sta.	Dock, curly	80	Sta.	Quackgrass	75	Sta.	Radish, wild	60	Sta.
Vermont	Carrot, wild	20	Sta.	Chicory	20	Up	Dandelion	50	Up	Quackgrass	50	Sta.	Thistle, Canada	15	Down
West Virginia	Ironweed	60	Up	Onion, wild 3/	40	Up	Thistle, Canada	35	Up	Thistle, musk	40	Up	Thistle, pasture	50	Up
North Central:															
Illinois	Barnyardgrass	10	Sta.	Crabgrass	10	Sta.	Panicum, fall	10	Sta.	Quackgrass	10	Sta.	Thistles	10	Sta.
Indiana	Dogfennel	3	Sta.	Horsenettle	5	Sta.	Ironweed	15	Sta.	Thistle, bull	15	Sta.	Thistle, Canada	10	Down
Iowa	Foxtails	30	Sta.	Ragweed, common	30	Sta.	Smartweed, Pa.	30	Sta.		--	--		--	--
Kansas	Ironweed	5	Sta.	Ragweed	20	Sta.	Redcedar, eastern	40	Up	Thistle	40	Sta.		--	--
Minnesota	Bromegrasses, weedy-	75	Sta.	Quackgrass	70	Sta.	Ragweed	70	Sta.	Thistle, Canada	75	Sta.	Vervain	50	Sta.
Missouri	Brome, downy	90	Up	Fleabanes	70	Sta.	Ragweed, common	80	Sta.	Ragweed, lanceleaf	80	Up	Thistles	50	Up
Nebraska	Bromegrasses, weedy-	65	Sta.	Dandelion	75	Up	Kochia	40	Sta.	Ragweed	90	Sta.	Threeawn, prairie	35	Sta.
Ohio	Crabgrass	40	Sta.	Quackgrass	20	Up	Ragweed	75	Sta.	Thistle, Canada	20	Sta.		--	--
South Dakota	Cocklebur	8	Sta.	Goldenrod	80	Sta.	Gumweed	15	Sta.	Spurge, leafy	2	Up	Thistle, Canada	1	Up
Wisconsin	Alyssum, hoary	50	Up	Cockle, white	90	Up	Pennycress, field	20	Up	Quackgrass	100	Sta.	Rocket, yellow	50	Up
Southern:															
Alabama	Dogfennel	45	Up	Dropseed	30	Up	Foxtail	30	Up	Horsenettle	15	Up	Smutgrass	20	Up
Arkansas	Croton	20	Up	Dock	10	Sta.	Ragweed	10	Sta.	Sandbur	10	Up	Sumpweed, rough	5	Up
Florida	Dock, curly	6	Up	Geranium, Carolina	10	Up	Matchweed	10	Sta.	Smutgrass	20	Sta.	Thistle, bull	5	Up
Georgia	Bahiagrass	30	Un	Dallisgrass	20	Sta.	Dock	40	Up	Smutgrass	20	Up	Sneezeweed, bitter	60	Sta.
Kentucky	Garlic, wild	50	Sta.	Ragweed	30	Up	Sneezeweed, bitter	30	Sta.	Sorrel, red	30	Up	Thistle	35	Up
Louisiana	Dock	80	Sta.	Horsenettle	20	Up	Mustard, wild	10	Sta.	Smartweed	20	Sta.	Yankeeweed	50	Up
Mississippi	Dock	75	Up	Dogfennel	60	Up	Goatweed	30	Up	Horsenettle	60	Up	Sneezeweed, bitter	80	Up
North Carolina	Buttercup	10	Up	Dock	20	Sta.	Garlic, wild	30	Sta.	Hawkweed	10	Up	Sneezeweed, bitter	40	Sta.
Oklahoma	Broomsedge	60	Sta.	Dock, curly	35	Up	Oak, blackjack	30	Up	Ragweed	90	Sta.	Sandbur	40	Up
South Carolina	Barley, little	25	Sta.	Dogfennel	20	Sta.	Garlic, wild	35	Sta.	Horsenettle	25	Sta.	Sneezeweed, bitter	45	Sta.
Tennessee	Broomsedge	80	Up	Buttercup	30	Sta.	Horsenettle	30	Up	Ragweed	50	Up	Sneezeweed, bitter	20	Down
Texas	Croton	20	Down	Dock	20	Down	Horsenettle	30	Down	Pigweed	60	Down	Sandbur	40	Down
Virginia	Buttercup, bulbous	10	Up	Garlic, wild	10	Sta.	Horsenettle	15	Up	Thistle, musk	5	Up	Thistle, plumeless	15	Up
Western:															
California	Bermudagrass	35	Up	Dock, curly	60	Up	Foxtail, yellow	25	--	Plantain, buckhorn	50	Sta.	Umbrellaplant, tall-	30	Up
Idaho	Barley, squirreltail	5	Sta.	Dandelion	10	Sta.	Quackgrass	40	Sta.	Thistle, bull	50	Up	Thistle, Canada	10	Up
Montana	Barley, wild	5	Up	Spurge, leafy	3	Up	Thistle, bull	1	Sta.	Thistle, Canada	5	Up	Thistle, musk	2	Up
Nevada	Arrowgrass	10	Sta.	Knapweed, Russian	10	Up	Thistle, Canada	15	Up	Whitetop	10	Up		--	--
New Mexico	Barnyardgrass	10	Down	Carelessweed	10	Down	Cocklebur	2	Down	Groundcherry	2	Down	Sunflowers	5	Down
Oregon	Quackgrass	20	Sta.	Buttercup	20	Up	Cheat	40	Sta.	Ragwort, tansy	20	Up	Thistle, Canada	10	Up
Utah	Bindweed, field	50	Up	Dandelion	50	Sta.	Gumweed	20	Up	Quackgrass	50	Up	Thistle, bull	25	Up
Washington	Buttercup	10	Up	Dandelion	25	Sta.	Quackgrass	25	Up	Thistle, Canada	20	Up		--	--
Wyoming	Barley, foxtail	50	Up	Dandelion	50	Up	Pigweed, redroot	30	Sta.	Thistle, Canada	20	Sta.	Thistle, Russian	30	Sta.
Hawaii	Eupatorium, river	20	Sta.	Guava	15	Up	Senna	10	Up	Sensitiveplant	10	Sta.	Sourgrass	5	Sta.

1/Sta., stationary
2/Nightshade, apple-of-Sodom
3/Reported as Onion, wild and Garlic, wild

Table 161.--Perennial unimproved pastures: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	---	1	---	----	5.00	----	100	--
Maryland	---	10	---	----	1.00	----	100	--
Pennsylvania	---	15	---	----	4.25	----	90	10
Vermont	---	2/	---	----	5.00	----	75	25
Northeastern	---	26	---	----	3.03	----	94	6
Illinois	---	25	---	----	3.00	----	98	2
Minnesota	---	75	---	----	2.00	----	95	5
Missouri	---	84	---	----	3.00	----	50	50
South Dakota	---	55	---	----	2.50	----	40	60
North Central	---	239	---	----	2.57	----	67	33
Arkansas	20	125	40	1.50	2.00	2.00	90	10
Louisiana	---	20	---	----	4.00	----	90	10
Mississippi	10	15	5	5.00	2.00	6.50	90	10
Virginia	---	330	---	----	5.70	----	50	50
Southern	30	490	45	2.67	4.57	2.50	67	33
Montana	---	3	---	----	2.00	----	40	60
Hawaii	1	20	---	25.00	15.00	----	50	50
Western	1	23	---	25.00	13.30	----	49	51
United States	31	778	45	3.39	4.16	2.50	67	33

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 500 acres.

Table 162.--Perennial unimproved pastures: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	---	Fair	---	Sta.	Little	No	---
Maryland	---	Good	---	Sta.	Little	No	---
Pennsylvania	---	Good	---	Up	Some	No	---
Vermont	---	Fair	---	Sta.	Little	No	---
Northeastern	---	2-Good 2-Fair	---	1-Up 3-Sta.	1-Some 3-Little	4-No	---
Minnesota	---	Fair	---	Up	Some	No	---
Missouri	---	Good	---	Up	Little	No	---
South Dakota	---	Fair	---	Up	Urgent	No	---
North Central	---	1-Good 2-Fair	---	3-Up	1-Urgent 1-Some 1-Little	3-No	---
Arkansas	Fair	Good	Good	Up	Some	No	---
Louisiana	---	Good	---	Up	Some	No	---
Mississippi	Fair	Good	Good	Up	Some	No	---
Virginia	---	Fair	---	Up	Urgent	No	---
Southern	2-Fair	3-Good 1-Fair	2-Good	4-Up	1-Urgent 3-Some	4-No	---
Montana	---	Fair	---	Up	Some	No	---
Hawaii	Fair	Fair	---	Up	Urgent	No	---
Western	1-Fair	2-Fair	---	2-Up	1-Urgent 1-Some	2-No	---
United States	3-Fair	6-Good 7-Fair	2-Good	10-Up 3-Sta.	3-Urgent 6-Some 4-Little	13-No	---

1/ Sta., stationary.

Table 163.--Perennial unimproved pastures: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1963

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Carrot, wild	30	Sta.	Cinquefoil	60	Sta.	Hawkweed	50	Sta.	Woodsorrel	40	Sta.	Yarrow	25	Sta.
Maryland	Buttercup	25	Up	Chickweed	40	Sta.	Dandelion	60	Up	Garlic, wild	30	Sta.	Thistle	30	Up
Pennsylvania	Buttercup, tall	15	Up	Dandelion	25	Down	Garlic, wild	20	Down	Goldenrod	12	Up	Plantain	18	Sta.
Vermont	Goldenrod	20	Sta.	Milkweed	20	Sta.	Quackgrass	80	Sta.	Steeplebush	20	Sta.	Thistles	25	Sta.
North Central:															
Indiana	Broomsedge	25	Sta.	Buckbrush	15	Sta.	Thistle, bull	10	Sta.	Thistle, Canada	5	Sta.	Tree seedlings	20	Sta.
Minnesota	Buckbrush	30	Sta.	Goldenrod	50	Sta.	Ironweed	65	Sta.	Quackgrass	90	Sta.	Thistle, Canada	85	Sta.
Missouri	Bromegrasses, weedy	90	Sta.	Broomsedge	95	Sta.	Eupatorium, late	90	Sta.	Fleabanes	90	Sta.	Ragweed, lanceleaf	95	Sta.
Nebraska	Bromegrasses, weedy	60	Sta.	Ironweed	80	Up	Ragweed, perennial	60	Sta.	Thistle, musk 2/	45	Up	Vervain, hoary	75	Up
South Dakota	Bindweed, field	20	Sta.	Goldenrod	50	Sta.	Ironweed	2	Sta.	Thistle, Canada	15	Sta.	Wormwood	50	Up
Wisconsin	Alyssum, hoary	70	Sta.	Daisy, oxeye	30	Sta.	Dock, curly	40	Sta.	Thistle, bull	50	Sta.	Yarrow, common	30	Sta.
Southern:															
Arkansas	Cypressweed	7	Up	Pricklypear	5	Sta.	Sneezeweed, bitter	50	Sta.	Starthistle, tall	10	Up	Sumpweed, rough	7	Up
Oklahoma	Broomsedge	60	Sta.	Dock, curly	35	Up	Oak, blackjack	30	Up	Ragweed	90	Sta.	Sandbur	40	Up
Tennessee	Broomsedge	80	Up	Crabgrass	80	Down	Ragweed	50	Up	Sneezeweed, bitter	35	Up	Thistles	40	Up
Virginia	Horsenettle	30	Up	Knapweed, spotted	20	Up	Mullein, common	5	Up	Thistle, musk	10	Up	Thistle, plumeless	30	Up
Western:															
California	Barley, foxtail	80	Up	Bermudagrass	40	Up	Brome, ripgut	75	Sta.	Cocklebur, spiny	15	Up	Starthistle, yellow	25	Sta.
Idaho	Daisy, oxeye	1	Up	Gumweed	10	Sta.	Tansymustard	1	Sta.	Thistle, musk	1	Up	Wormwood	5	Sta.
Montana	Burdock	7	Up	Knapweed, spotted	15	Up	Sagewort, fringed	20	Up	Tansy	2	Up	Thistle, Canada	5	Sta.
Oregon	Bindweed, field	10	Up	Knapweed, Russian	1	Sta.	Quackgrass	5	Up	Thistle, Canada	10	Up	Velvetgrass	1	Sta.
Utah	Barley, foxtail	40	Sta.	Dock, curly	40	Up	Plantain, broadleaf	25	Up	Thistle, bull	30	Up	Thistle, Canada	25	Up
Hawaii	Broomsedge	20	Up	Flatsedge	15	Up	Foxtail, West Indian	2	Up	Guava	25	Up	Lantana	10	Sta.

1/ Sta., stationary.

2/ Musk or nodding thistle, Carduus; and Thistle, plumeless.

Table 164.--Mountain rangeland: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
New Hampshire	---	2	---	---	50.00	---	100	---
Northeastern	---	2	---	---	50.00	---	100	---
South Dakota	---	25	---	---	5.00	---	25	75
North Central	---	25	---	---	5.00	---	25	75
Texas	---	600	---	---	6.00	---	10	90
Southern	---	600	---	---	6.00	---	10	90
California	---	80	---	---	6.50	---	10	90
Colorado	---	10	---	---	5.00	---	60	40
Idaho	---	6	---	---	5.00	---	75	25
Montana	---	20	---	---	3.00	---	5	95
New Mexico	---	1	---	---	3.90	---	---	100
Oregon	---	2	---	---	2.50	---	---	100
Utah	---	5	---	---	3.00	---	10	90
Washington	---	2	---	---	2.00	---	10	90
Wyoming	---	100	---	---	3.00	---	---	100
Hawaii	---	10	---	---	7.00	---	50	50
Western	---	236	---	---	4.48	---	11	89
United States	---	863	---	---	5.66	---	11	89

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 165.--Mountain rangeland: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
New Hampshire	---	Fair	---	Sta.	Some	No	---
Northeastern	---	1-Fair	---	1-Sta.	1-Some	1-No	---
South Dakota	---	Good	---	Up	Some	No	---
North Central	---	1-Good	---	1-Up	1-Some	1-No	---
Texas	---	Good	---	Up	Some	No	---
Southern	---	1-Good	---	1-Up	1-Some	1-No	---
California	---	Good	---	Sta.	Some	No	---
Colorado	---	Fair	---	Up	Urgent	No	---
Idaho	---	Good	---	Sta.	Some	No	---
Montana	---	Good	---	Up	Little	No	---
New Mexico	---	Good	---	Sta.	Some	No	---
Oregon	---	Good	---	Up	Some	No	---
Utah	---	Good	---	Up	Some	No	---
Washington	---	Good	---	Up	Some	No	---
Wyoming	---	Good	---	Up	Some	No	---
Hawaii	---	Fair	---	Up	Urgent	No	---
Western	---	8-Good 2-Fair	---	7-Up 3-Sta.	2-Urgent 7-Some 1-Little	10-No	---
United States	---	10-Good 3-Fair	---	9-Up 4-Sta.	2-Urgent 10-Some 1-Little	13-No	---

1/ Sta., stationary.

Table 100.-- Mountain rangeland: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1970

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
North Central:															
Nebraska	Bromegrasses, weedy-	75	Sta.	Ragweed, perennial--	80	Up	Sageworts	50	Up	Thistle, musk 2/	30	Up	Vervain, hoary	65	S
South Dakota	Burdock	8	Sta.	Mullein	14	Sta.	Sagebrush	20	Sta.	Spurge, leafy	2	Up	Thistle, Canada	13	
Southern:															
Texas	Creosotebush	5	Up	Juniper	45	Up	Mesquite	30	Up	Pricklypear	70	Up	Saltcedar	2	
Western:															
California	Ceanothus, wedgeleaf	25	Sta.	Chamise	25	Sta.	Larkspur, tall	10	Up	Oak (several species)	50	Sta.	Sagebrush, big	15	S
Colorado	Groundsel	2	Up	Hellebore, western 3/	1	Up	Larkspurs	1	Up	Mulesears	3	Sta.	Oak, (brush)	25	S
Idaho	Hellebore	1	Sta.	Larkspur, tall	1	Down	Spurge, leafy	1	Up	Thistle, Canada	20	Up	Toadflax, yellow	5	
Montana	Brome, downy	--	Up	Larkspur, tall	--	Sta.	Sagebrush, big	--	Sta.	Spurge, leafy	--	Up	Thistle, Canada	--	S
New Mexico	Bracken	1	--	Loco	1	--	Pingue	3	--	Sagebrush	15	Down	----------	--	
Oregon	Juniper	30	Sta.	Larkspur	3	Up	Sage, Mediterranean-	5	Up	Sedges	6	Sta.	Thistle, Canada	1	
Utah	Juniper, Utah	25	Up	Mulesears	10	Up	Pine, Pinon	15	Sta.	Sagebrush	50	Up	Thistle, Canada	5	
Washington	Brush	25	Up	Daisy, oxeye	1	Up	Hellebore, western 3/	1	Up	Larkspur, tall	1	Sta.	Thistle, Canada	1	
Wyoming	Larkspur, tall	20	Up	Lupine	15	Up	Mulesears	30	Up	Sagebrush	60	Down	----------	--	
Hawaii	A'alii	10	Sta.	Fern species	25	Up	Pukiawe	15	Sta.	Velvetgrass	15	Sta.	Vernalgrass, sweet--	15	S

1/ Sta., stationary.
2/ Thistle, musk; and Thistle, plumeless.
3/ Hellebore, western false.

Table 167.--Foothill (prairie) rangeland: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Kansas	---	500	---	---	2.00	---	50	50
North Dakota	---	147	---	---	2.00	---	30	70
South Dakota	---	100	---	---	3.00	---	20	80
North Central	---	747	---	---	2.13	---	42	58
Oklahoma	---	300	---	---	4.00	---	20	80
Texas	---	1,500	---	---	6.00	---	10	90
Southern	---	1,800	---	---	5.67	---	12	88
California	---	30	---	---	6.50	---	10	90
Colorado	---	20	---	---	3.00	---	20	80
Idaho	---	45	---	---	3.00	---	5	95
Montana	---	30	---	---	3.00	---	5	95
Nevada	---	25	---	---	3.00	---	10	90
New Mexico	---	3	---	---	3.90	---	---	100
Utah	---	5	---	---	3.00	---	10	90
Washington	---	8	---	---	2.00	---	10	90
Wyoming	---	20	---	---	3.50	---	20	80
Hawaii	---	15	---	---	15.00	---	50	50
Western	---	201	---	---	4.44	---	13	87
United States	---	2,748	---	---	4.62	---	20	80

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 168.--Foothill (prairie) rangeland: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Kansas	---	Fair	---	Up	Some	No	---
North Dakota	---	Good	---	Up	Some	No	---
South Dakota	---	Good	---	Up	Some	No	---
North Central	---	2-Good 1-Fair	---	3-Up	3-Some	3-No	---
Oklahoma	---	Fair	---	Up	Some	No	---
Texas	---	Good	---	Up	Some	No	---
Southern	---	1-Good 1-Fair	---	2-Up	2-Some	2-No	---
California	---	Good	---	Sta.	Some	No	---
Colorado	---	Good	---	Up	Urgent	No	---
Idaho	---	Good	---	Up	Some	No	---
Montana	---	Good	---	Up	Little	No	---
Nevada	---	Fair	---	Up	Some	No	---
New Mexico	---	Good	---	Sta.	Some	No	---
Utah	---	Good	---	Up	Some	No	---
Washington	---	Good	---	Up	Some	No	---
Wyoming	---	Good	---	Up	Some	No	---
Hawaii	---	Fair	---	Up	Urgent	No	---
Western	---	8-Good 2-Fair	---	8-Up 2-Sta.	2-Urgent 7-Some 1-Little	10-No	---
United States	---	11-Good 4-Fair	---	13-Up 2-Sta.	2-Urgent 12-Some 1-Little	15-No	---

1/ Sta., stationary.

Table 169.--Foothill rangeland: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
North Central:															
Kansas	Ironweed	15	Sta.	Mullein	10	Up	Ragweed, western	30	Sta.	Redcedar, eastern	15	Up	Thistle, musk	25	Sta.
North Dakota	Goldenrods	40	Sta.	Gumweed	40	Sta.	Sagebrush, fringed	85	Sta.	Snowberry, western	60	Sta.	Spurge, leafy	50	Up
South Dakota	Bindweed, field	15	Sta.	Bromegrasses, weedy-	80	Sta.	Goldenrod	2	Sta.	Gumweed	60	Sta.	Sagebrushes	70	Sta.
Southern:															
Oklahoma	Broomweed	70	Sta.	Bullnettle	15	Up	Ragweed	80	Sta.	Sagebrush	40	Sta.	Sandbur	25	Up
Texas	Mesquite	52	Up	Oak, live	32	Up	Pricklypear	72	Up	Sagebrush	25	Sta.	Whitebrush	15	Up
Western:															
California	Goatgrass, barb	5	Up	Medusahead	35	Up	Oak, blue	35	Up	Starthistle, yellow-	30	Up	Thistle, Italian	10	Up
Colorado	Larkspurs	2	Sta.	Loco	5	Up	Pricklypear	20	Up	Rabbitbrush	15	Up	Sagebrush	25	Sta.
Idaho	Brome, downy	30	Sta.	Penthcamus	1	Sta.	Knapweed, spotted	1	Up	Medusahead	5	Up	Sagebrush	70	Down
Montana	Brome, downy	7	Up	Clubmoss	10	Sta.	Knapweed, spotted	5	Sta.	Sagebrush, fringed	5	Up	Spurge, leafy	5	Sta.
Nevada	Halogeton	20	Up	Larkspur, tall	20	Up	--	--	--	--	--	--	--	--	--
New Mexico	Dalea, broom	8	Up	Greaseweed	3	Sta.	Juniper	15	Up	Rabbitbrush, rubber-	6	Sta.	Sagebrush, big	20	Sta.
Oregon	Blackberries	2	Up	Dogtail, crested	5	Up	Juniper	30	Up	Medusahead	5	Up	Ragwort, tansy	4	Up
Utah	Brome, downy	60	Sta.	Mullein	10	Up	Rabbitbrush	15	Up	Sagebrush, big	70	Sta.	Thistle, Russian	60	Sta.
Washington	Balsamroot, arrowleaf	3	Up	Brush	8	Up	Knapweeds	1	Up	Medusahead	3	Up	Thistle, Canada	1	Up
Wyoming	Brome, downy	40	Up	Larkspur, Geyer's	20	Sta.	Pricklypear	20	Down	Sagebrush	50	Sta.	Sagebrush, fringed	30	Up
Hawaii	Broomsedge	20	Up	Foxtail, yellow	20	Sta.	Guava	15	Sta.	Melastoma, banks	15	Sta.	Peppertree, Brazil	20	Up

1/Sta., stationary.

Table 170.--Arid rangeland: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Texas	---	260	---	---	5.00	---	10	90
Southern	---	260	---	---	5.00	---	10	90
California	---	5	---	---	5.00	---	30	70
Idaho	---	14	---	---	3.00	---	95	5
Montana	---	2	---	---	3.00	---	5	95
New Mexico	---	5	---	---	3.00	---	100	---
Oregon	---	100	---	---	3.00	---	10	90
Utah	---	2	---	---	3.00	---	10	90
Washington	---	15	---	---	2.00	---	10	90
Wyoming	---	8	---	---	8.00	---	---	100
Hawaii	---	25	---	---	15.00	---	25	75
Western	---	176	---	---	4.90	---	22	78
United States	---	436	---	---	4.96	---	15	85

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 171.--Arid rangeland: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Texas	---	Good	---	Up	Urgent	No	---
Southern	---	1-Good	---	1-Up	1-Urgent	1-No	---
California	---	Fair	---	Sta.	Urgent	No	---
Idaho	---	Fair	---	Sta.	Some	No	---
Montana	---	Good	---	Up	Little	No	---
New Mexico	---	Good	---	Up	Some	No	---
Oregon	---	Good	---	Up	Some	No	---
Utah	---	Good	---	Up	Some	No	---
Washington	---	Good	---	Up	Some	No	---
Wyoming	---	Good	---	Up	Some	No	---
Hawaii	---	Good	---	Up	Urgent	No	---
Western	---	7-Good 2-Fair	---	7-Up 2-Sta.	2-Urgent 6-Some 1-Little	9-No	---
United States	---	8-Good 2-Fair	---	8-Up 2-Sta.	3-Urgent 6-Some 1-Little	10-No	---

1/ Sta., stationary.

Table 172.--Arid rangeland: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
North Central:															
South Dakota	Cactus	5	Sta.	----------	--	--	----------	--	--	----------	--	--	----------	--	--
Southern:															
Texas	Blackbush	45	Up	Creosotebush	72	Up	Mesquite	76	Up	Saltcedar	3	Up	Tarbush	64	Sta.
Western:															
Arizona	Cactus	40	Sta.	Juniper	15	Sta.	Mesquite	30	Sta.	Oak	20	Sta.	----------	--	--
California	Fescue, rattail	25	Sta.	Juniper, California-	15	Up	Starthistle, yellow-	50	Sta.	Tansymustard	30	Sta.	Tarweed, common	45	Sta.
Idaho	Brome, downy	80	Sta.	Halogeton	5	Sta.	Mustard	90	Sta.	Rabbitbrush	--	Sta.	Sunflower	50	Sta.
Montana	Brome, downy	5	Sta.	Knapweed, spotted	2	Up	Pricklypear	1	Sta.	Sagebrush, big	15	Sta.	Spurge, leafy	1	Sta.
New Mexico	Cholla	2	Sta.	Creosotebush	12	Sta.	Junipers	1	Down	Mesquite	20	Up	Soapweed, small	2	Sta.
Oregon	Larkspur, low	10	Up	Medusahead	5	Up	Rabbitbrush	5	Up	Sagebrush	40	Up	Whitetop	3	Up
Utah	Halogeton	45	Up	Loco	20	Sta.	Milkweed, western 2/	10	Up	Rabbitbrush	30	Up	Thistle, Russian	60	Sta.
Washington	Brome, downy	70	Down	Horsebrush, smooth	1	Sta.	Rabbitbrush, greene-	15	Up	Sagebrush, big	30	Up	----------	--	--
Wyoming	Brome, downy	30	Up	Greasewood	15	Sta.	Halogeton	20	Up	Pricklypear	20	Sta.	Thistle, Russian	30	Up
Hawaii	Fountaingrass	10	Up	Huisache	10	Sta.	Lantana	25	Down	Nightshade 3/	5	Sta.	Partridgepea	5	Sta.

1/Sta., stationary.
2/Milkweed, western whorled.
3/Nightshade, ample-of-Sodom.

Table 173.--Rainbelt rangeland: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom Operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Florida	---	1	---	---	2.00	---	25	75
Texas	---	300	---	---	9.00	---	10	90
Southern	---	301	---	---	8.98	---	10	90
California	---	10	---	---	6.50	---	30	70
Hawaii	---	15	---	---	15.00	---	50	50
Western	---	25	---	---	11.60	---	42	58
United States	---	326	---	---	9.18	---	12	88

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 174.--Rainbelt rangeland: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistent problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Florida	---	Poor	---	Down	Little	No	---
Texas	---	Good	---	Up	Urgent	No	---
Southern	---	1-Good 1-Poor	---	1-Up 1-Down	1-Urgent 1-Little	2-No	---
California	---	Good	---	Sta.	Urgent	No	---
Hawaii	---	Fair	---	Up	Urgent	No	---
Western	---	1-Good 1-Fair	---	1-Up 1-Sta.	2-Urgent	2-No	---
United States	---	2-Good 1-Fair 1-Poor	---	2-Up 1-Sta. 1-Down	3-Urgent 1-Little	4-No	---

1/ Sta., stationary.

Table 175.-- Rainbelt rangeland: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1[illegible]

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Southern:															
Florida	Dogfennel	10	Sta.	Gallberry	20	Sta.	Palmetto, saw	70	Sta.	Smutgrass	10	Up	Waxmyrtle	10	Sta.
Texas	Elm	12	Up	Huisache	12	Up	Oak, post	52	Up	Rose, Macartney	3	Up	Yaupon	12	Up
Western:															
California	Blackberry, Himalaya	20	Up	Broom, Scotch	12	Up	Gorse	5	Up	Ragwort, tansy	5	Up	Rush, soft	10	Up
Oregon	Berries, wild	2	Up	Buttercup	3	Up	Iris	1	Up	Oak, poison	5	Up	Ragwort, tansy	20	Up
Hawaii	Eupatorium, river	50	Up	Fern	35	Up	Guava	40	Sta.	Melastoma, banks	30	Sta.	Sourbush	20	Sta.

1/Sta., stationary.

FOREST PLANTINGS

(See General Limitations)

The control of competing vegetation increases the chance of success in forest plantings and assures the more rapid development of forest species. Almost 500,000 acres were reported as receiving herbicidal weed control. The cost was approximately $6 million (tables 1 through 7, 176, and 177). The most important weeds mentioned by States in forest plantings were herbaceous. These outnumbered undesirable woody plants by over two to one (table 178).

Some of the more important weeds and complexes mentioned were: quackgrass, oak species, blackberries and brambles, bracken and other ferns, perennial grasses, pigweeds, broomsedge, and bindweeds. Research, so far, has shown a high potential for improvement of weed control in forest plantings. More research in this area is badly needed.

Table 176.--Forest plantings: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	2	1	---	10.00	15.00	----	90	10
New Jersey	---	29	---	----	15.00	----	95	5
Pennsylvania	5	12	---	9.50	10.50	----	90	10
Vermont	.1	.2	---	7.50	7.50	----	100	---
Northeastern	7.1	42.2	---	9.61	13.68	----	93	7
Illinois	29	.3	0.3	8.00	9.50	11.00	95	5
Iowa	.3	---	---	4.00	----	----	100	---
Kansas	.9	.1	---	13.00	10.00	----	90	10
North Dakota	11	.6	---	5.00	2.00	----	60	40
North Central	41.2	1.0	.3	7.28	5.05	11.00	85	15
Alabama	---	100	---	----	15.00	----	10	90
Arkansas	---	10	---	----	10.00	----	1	99
Florida	---	---	10	----	----	15.00	5	95
Louisiana	---	131	---	----	15.00	----	91	9
Mississippi	---	100	---	----	13.00	----	50	50
North Carolina	---	2	---	----	10.00	----	100	---
Tennessee	---	1	---	----	8.00	----	5	95
Virginia	---	2	---	----	10.00	----	50	50
Southern	---	346.0	10.0	----	14.20	15.00	51	49
California	5	7	---	10.00	12.00	----	35	65
Idaho	---	2/	---	----	3.75	----	100	---
Montana	---	.5	---	----	7.00	----	100	---
Oregon	---	1	---	----	10.00	----	100	---
Washington	---	1	---	----	5.00	----	10	90
Hawaii	---	.2	.2	----	10.00	15.00	100	---
Western	5.0	9.7	.2	10.00	10.77	15.00	42	58
United States	53.3	398.9	10.5	7.85	14.04	14.89	58	42

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farm-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 177.--Forest plantings: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	Good	Fair	---	Up	Some	No	---
New Jersey	---	Good	---	Up	Urgent	No	---
Pennsylvania	Good	Good	---	Up	Some	No	---
Vermont	Good	Good	---	Up	Little	No	---
Northeastern	3-Good	3-Good 1-Fair	---	4-Up	1-Urgent 2-Some 1-Little	4-No	---
Illinois	Good	Good	Good	Up	Some	Yes	10
Iowa	Fair	---	---	Up	Some	No	---
Kansas	Fair	Fair	---	Up	Some	No	---
North Dakota	Good	Fair	---	Up	Some	No	---
North Central	2-Good 2-Fair	1-Good 2-Fair	1-Good	4-Up	4-Some	1-Yes 3-No	7
Alabama	---	Good	---	Down	Urgent	No	---
Arkansas	---	Fair	---	Down	Little	No	---
Florida	---	---	Fair	Up	Some	No	---
Louisiana	---	Good	---	Up	Some	No	---
Mississippi	---	Fair	---	Up	Some	No	---
North Carolina	---	Good	---	Up	Some	No	---
Tennessee	---	Fair	---	Up	Some	No	---
Virginia	---	Fair	---	Up	Urgent	No	---
Southern	---	3-Good 4-Fair	1-Fair	6-Up 2-Down	2-Urgent 5-Some 1-Little	8-No	---
California	Fair	Fair	---	Up	Urgent	No	---
Idaho	---	Good	---	Up	Little	No	---
Montana	---	Good	---	Sta.	Little	No	---
Oregon	---	Good	---	Up	Some	No	---
Washington	---	Good	---	Up	Some	No	---
Hawaii	---	Fair	Good	Up	Urgent	No	---
Western	1-Fair	4-Good 2-Fair	1-Good	5-Up 1-Sta.	2-Urgent 2-Some 2-Little	6-No	---
United States	5-Good 3-Fair	11-Good 9-Fair	2-Good 1-Fair	19-Up 1-Sta. 2-Down	5-Urgent 13-Some 4-Little	1-Yes 21-No	1

1/ Sta., stationary.

Table 178.--Forest plantings: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1960

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Crabgrass	100	Sta.	Nutsedge	100	Up	Purslane	100	Sta.	Quackgrass	100	Up	Toadflax	100	Up
New Hampshire	Bracken	40	Down	Cottonwood	20	Sta.	Quackgrass	60	Down	Spirea	20	Sta.	Sweetfern	30	Sta.
New Jersey	Brambles	25	Sta.	Broomsedge	30	Up	Creeper, Virginia	35	Up	Foxtails	25	Sta.	Ivy, poison	20	Sta.
Pennsylvania	Bluegrass	25	Sta.	Foxtail, yellow	30	Up	Goldenrod	25	Sta.	Plants, woody	40	Sta.	Quackgrass	60	Up
Vermont	Brambles	30	Sta.	Brush	50	Sta.	Goldenrod	25	Sta.	Grasses, annual	80	Down	Quackgrass	90	Down
North Central:															
Illinois	Bindweed, field	--	Up	Milkweed, climbing	--	--	Persimmon	--	Sta.	Quackgrass	--	Sta.	Sassafrass	--	Sta.
Iowa	Barnyardgrass	100	Sta.	Bluegrass, Kentucky	100	Sta.	Brome, smooth	100	Sta.	Foxtails	100	Sta.	Ragweed	100	Sta.
Kansas	Bindweed	20	Up	Grasses, perennial	60	Sta.	Sandbur	20	Sta.	Thistle, Russian	10	Sta.	--	--	--
Minnesota	Bluegrass	60	Sta.	Brush, mixed	30	Sta.	Foxtails	40	Sta.	Pigweed	40	Sta.	Quackgrass	100	Sta.
North Dakota	Kochia	60	Sta.	Mustard, wild	60	Sta.	Pigweed, redroot	50	Sta.	Spurge, leafy	40	Up	Thistle, Russian	25	Sta.
Southern:															
Alabama	Blackgum	75	Sta.	Hardwood (all other)	75	Sta.	Hickory	75	Sta.	Oaks	75	Sta.	Sweetgum	75	Sta.
Arkansas	Oak, blackjack	20	Sta.	Oak, post	20	Sta.	--	--	--	--	--	--	--	--	--
Florida	Gallberry	10	Down	Greenbrier	1	Sta.	Oak, scrub	20	Down	Palmetto, saw	45	Down	Titi	25	Down
Louisiana	Hickory	60	Sta.	Oak, blackjack	25	Sta.	Oak, post	25	Sta.	Oak, Southern red	30	Sta.	Sweetgum	40	Sta.
Oklahoma	Bermudagrass	60	Up	Broomsedge	40	Up	Broomweed	40	Sta.	Johnsongrass	30	Sta.	Ragweed	70	Sta.
South Carolina	Blackberry	50	Sta.	Crabgrass	80	Sta.	Horsenettle	40	Sta.	Pigweed	50	Up	Ragweed	40	Up
Tennessee	Broomsedge	40	Sta.	Fescue	70	Sta.	Ironweed	35	Sta.	Ragweed	30	Sta.	Sumac	25	Up
Virginia	Annuals, winter	20	Sta.	Bermudagrass	10	Sta.	Broomsedge	20	Sta.	Dew and blackberry	20	Sta.	Grasses, annual	20	Sta.
Western:															
California	Bearmat	50	Sta.	Bracken	20	Up	Grass sod	50	Sta.	Manzanita	20	Sta.	Sorrel, red	20	Up
Idaho	Fescue, tall	90	Up	Knotweed, prostrate	60	Sta.	Mallow, common	70	Sta.	Pigweed, redroot	40	Sta.	Quackgrass	40	Up
Montana	Brome, downy	30	Sta.	Lambsquarters	50	Sta.	Pigweed	50	Sta.	Thistle, bull	5	Down	Thistle, Canada	5	Sta.
Oregon	Alder	10	--	Bentgrass	10	--	Berries, wild	3	--	Gorse	3	--	Velvetgrass	1	--
Utah	Bindweed, field	25	Up	Mallow	50	Sta.	Purslane	25	Up	Quackgrass	25	Up	Thistle, Russian	50	Up
Washington	Bracken	10	Up	Thistle, Canada	10	Up	--	--	--	--	--	--	--	--	--
Hawaii	Tephrosia, hoary	40	Sta.	Fern	30	Up	Firetree	10	Sta.	Melastoma, banks	30	Sta.	Passionfruit, banana	10	Up

1/ Sta., stationary.

NONCROPLAND

(See General Limitations)

Noncropland consists of ditchbanks and fencerows; feedlots; highway, railroad, and utility rights of way; areas surrounding buildings; and industrial and defense installations. Weed growth on noncropland is a serious problem for agriculture. Uncontrolled weeds in these areas provide a continuous source of weed seed that infests adjacent farmlands. They also constitute sources of inoculum for many diseases of crops, havens for destructive rodents and other animals, and widespread fire hazards.

Thirty-seven States responded to the survey on weed control on noncroplands. However, only 27 of these provided full or partial estimates of the acres of noncropland that had been treated with herbicides. These States reported the treatment of 1.7 million acres of noncropland. This represents a 53-percent reduction from the acreage reported treated for weed control during the year 1965. The use of herbicides on noncropland has declined since 1962, when 10 percent more noncropland was treated for weed control than was reported in 1965. The significance of the decline in herbicide use is not obvious, although it may be due in part to the present need for maintenance programs only on the large areas previously treated.

Farmers and other landowners applied herbicides on 48 percent of the treated area in 1968, as compared with 39 percent in 1965. The decrease in spraying by custom operators is apparently related to the sizable reduction in the total area of noncropland treated. Of the total noncropland area treated during 1968, only 1,000 acres were treated both preemergence and postemergence. The area treated preemergence only in 1968 was 138,000 acres, while 1.5 million acres were treated postemergence only.

These figures for 1968 represent reductions from 1965 of approximately 88 and 25 percent for preemergence and postemergence treatments, respectively. The average cost of preemergence treatments reported for 1968 was $20.33 per acre--a reduction of $12.07 per acre from the average cost reported for 1965. The average cost for postemergence treatments, $15.74, was up $2.84 from the average cost of $12.90 per acre reported for 1965 (tables 1 through 7 and 179).

Almost 75 percent of the States responding to the survey estimated an upward trend in the use of herbicides on noncropland. However, the consistent reduction in the treated area since 1962 makes this estimate questionable. Most of the States reported the effectiveness of preemergence herbicides as good. Slightly more than half reported the postemergence herbicides to be fair in effectiveness. Twenty-three of the 27 States indicated that persistence of herbicides on noncropland was no problem. Six States reported an urgent need for better herbicides, while 20 States believed that there was some need for improvement (table 180).

The geographic regions that reported the greatest use of herbicides on noncropland were the north central region (694,000 acres) and the southern region (631,000 acres). States with the greatest areas treated were Nebraska,

Kansas, and Texas. California, which reported a total area treated of 1.3 million acres in 1965, indicated a treated area of only 124,000 acres in 1968.

Regionally, from east to west, the percent of herbicides applied by farmers or other landowners decreased from a high of 75 percent in the Northeast to a low of 34 percent in the western region. Custom operators probably play a larger role in the control of noncropland weeds where population densities are least and where individual areas to be treated are larger (table 179).

The 37 States reporting listed a total of 75 weeds or weed complexes of importance in noncropland. The weeds included herbaceous annual and perennial weeds, and woody plants. The 10 reported most frequently (in decreasing order of frequency) were: thistles, johnsongrass, ragweeds, Russion thistle, quackgrass, brush species, bindweeds, bermudagrass, sunflowers, and poison ivy.

Many infestations of weeds were stationary; however, for infestations of many of the more difficult to control weeds, such as bindweeds, greenbriers and other vines, bermudagrass, and Russian thistle, the infestation intensity was up. Infestations of quackgrass and johnsongrass were down in several States. The many reports of stationary trends in infestations and the several instances of reports of decreasing intensity trends are evidence that herbicides are capable of controlling weeds on noncroplands (tables 181 and 182).

Table 179.--Noncropland: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	---	5	---	---	20.00	---	100	---
Delaware	1	10	1	50.00	5.00	55.00	20	80
New Jersey	---	20	---	---	4.00	---	85	15
Pennsylvania	---	21	---	---	16.00	---	90	10
Northeastern	1	56	1	50.00	10.11	55.00	75	25
Illinois	---	50	---	---	10.00	---	10	90
Iowa	1	---	---	10.00	---	---	100	---
Kansas	---	230	---	---	2.50	---	80	20
Missouri	---	20	---	---	4.00	---	10	90
Nebraska	---	250	---	---	4.00	---	15	85
North Dakota	1	10	---	20.00	2.50	---	10	90
Ohio	---	25	---	---	3.50	---	30	70
South Dakota	7	100	---	50.00	50.00	---	75	25
North Central	9	685	---	42.22	10.61	---	46	54
Arkansas	1	5	---	100.00	5.00	---	100	---
Georgia	50	150	---	25.00	15.00	---	50	50
Mississippi	---	20	---	---	5.00	---	25	75
Tennessee	---	5	---	---	6.00	---	20	80
Texas	50	200	---	10.00	8.00	---	90	10
Virginia	---	150	---	---	50.00	---	5	95
Southern	101	530	---	18.32	21.71	---	55	45
Arizona	25	25	---	20.00	15.00	---	50	50
California	---	124	---	---	24.00	---	25	75
Colorado	---	20	---	---	25.00	---	70	30
Idaho	---	7	---	---	16.00	---	10	90
Montana	1	3	---	10.00	4.50	---	90	10
Utah	1	10	---	15.00	3.00	---	80	20
Washington	---	50	---	---	8.00	---	10	90
Wyoming	---	2	---	---	30.00	---	80	20
Hawaii	---	8	---	---	15.00	---	50	50
Western	27	249	---	19.44	18.42	---	34	66
United States	138	1,520	1	20.33	15.74	55.00	48	52

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

Table 180.--Noncropland: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	---	Fair	---	Up	Some	No	---
Delaware	Good	Good	Good	Up	Some	No	---
New Jersey	---	Good	---	Sta.	Some	No	---
Pennsylvania	---	Good	---	Up	Some	No	---
Northeastern	1-Good	3-Good 1-Fair	1-Good	3-Up 1-Sta.	4-Some	4-No	---
Illinois	---	Fair	---	Sta.	Some	No	---
Iowa	Fair	---	---	Up	Some	No	---
Kansas	---	Good	---	Sta.	Little	No	---
Missouri	---	Good	---	Up	Urgent	No	---
Nebraska	---	Fair	---	Up	Urgent	No	---
North Dakota	Good	Fair	---	Up	Some	No	---
Ohio	---	Good	---	Sta.	Some	No	---
South Dakota	---	Good	---	Sta.	Some	No	---
North Central	1-Good 1-Fair	4-Good 3-Fair	---	4-Up 4-Sta.	2-Urgent 5-Some 1-Little	8-No	---
Arkansas	Good	Fair	Good	Up	Some	No	---
Georgia	Good	Good	Good	Up	Some	No	---
Mississippi	---	Fair	---	Up	Urgent	No	5
Tennessee	---	Fair	---	Up	Some	No	---
Texas	Good	Good	---	Up	Some	Yes	---
Virginia	---	Fair	---	Up	Some	No	---
Southern	3-Good	2-Good 4-Fair	2-Good	6-Up	1-Urgent 5-Some	1-Yes 5-No	---
Arizona	Good	Fair	---	Up	Some	Yes	5
California	---	Good	---	Up	Some	No	---
Colorado	---	Fair	---	Up	Urgent	Yes	80
Idaho	---	Fair	---	Sta.	Some	No	---
Montana	Fair	Fair	---	Up	Some	No	---
Utah	Good	Fair	---	Up	Some	No	---
Washington	---	Good	---	Up	Some	No	---
Wyoming	---	Good	---	Up	Urgent	Yes	80
Hawaii	---	Fair	---	Sta.	Urgent	No	---
Western	2-Good 1-Fair	3-Good 6-Fair	---	7-Up 2-Sta.	3-Urgent 6-Some	3-Yes 6-No	7
United States	7-Good 2-Fair	12-Good 14-Fair	3-Good	20-Up 7-Sta.	6-Urgent 20-Some 1-Little	4-Yes 23-No	1

1/ Sta., stationary.

Table 181.--Noncropland: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in noncropland]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							Percent		Percent		Percent	Percent
Alder	1	--	--	--	1	--	---	1	5	--	---	5
Ash	1	1	--	--	--	1	30	--	---	--	---	30
Barnyardgrass	1	--	--	--	1	1	20	--	---	--	---	20
*Bermudagrass	5	--	--	3	2	3	57	2	55	--	---	56
Berries, wild	1	--	--	--	1	--	---	1	5	--	---	5
*Bindweeds	5	1	3	--	1	2	18	3	60 2/	--	---	32 2/
Blackberries	2	--	--	1	1	--	---	2	20	--	---	20
Bouncingbet	1	--	1	--	--	--	---	1	(2/)	--	---	(2/)
Bracken	1	1	--	--	--	1	30	--	---	--	---	30
Brambles and briars	3	1	--	2	--	2	52	1	30	--	---	45
Bromes	2	--	--	--	2	2	32	--	---	--	---	32
Broomsedge	2	--	--	2	--	2	85	--	---	--	---	85
*Brush	6 3/	3	1	1	1	3	35	1	(2/)	1	(2/)	35 2/
Burdock	1	--	--	--	1	--	---	1	20	--	---	20
Cockleburs	1	--	--	--	1	--	---	1	25	--	---	25
Crabgrasses	1	--	1	--	--	1	40	--	---	--	---	40
Cress, hoary	1	--	--	--	1	1	15	--	---	--	---	15
Dock, curly	1	--	--	1	--	--	---	--	---	1	10	10
Dogbane, hemp	1	1	--	--	--	--	---	1	5	--	---	5
Elm	1	--	--	1	--	--	---	1	15	--	---	15
Ferns	1	--	--	--	1	--	---	1	20	--	---	20
Foxtails	1	--	1	--	--	1	50	--	---	--	---	50
Goldenrods	2	1	1	--	--	2	15	--	---	--	---	15
Grasses, annual	1	--	--	1	--	1	50	--	---	--	---	50
Greenbriers	1	1	--	--	--	--	---	1	65	--	---	65
Guava	1	--	--	--	1	1	25	--	---	--	---	25
Hemp	2	--	2	--	--	2	(2/)	--	---	--	---	(2/)
Honeysuckle	2	--	--	2	--	1	20	1	60	--	---	40
Horseweed	1	--	1	--	--	1	(2/)	--	---	--	---	(2/)
Ironweed	1	1	--	--	--	1	50	--	---	--	---	---
*Johnsongrass	12 3/	1	3	5	3	4	32	5	27 2/	2	30	30 2/
Knapweeds	3	--	--	--	3	1	15	2	11	--	---	12
Knotweeds	1	1	--	--	--	--	---	1	20	--	---	20
Kochia	2	--	1	--	1	1	25	1	20	--	---	22
Kudzu	1	--	--	1	--	--	---	1	30	--	---	30
Lambsquarters	1	--	1	--	--	1	25	--	---	--	---	25
Leadtree	1	--	--	--	1	1	20	--	---	--	---	20
Lettuce, prickly	1	--	--	--	1	1	60	--	---	--	---	60
Locust, black	1	--	--	1	--	1	10	--	---	--	---	10
Maples	2	1	--	1	--	2	20	--	---	--	---	20
Mesquite	1	--	--	1	--	--	---	1	(2/)	--	---	(2/)
*Milkweeds	4	1	2	--	1	1	10	3	5 2/	--	---	8 2/
Mullein	1	--	--	--	1	--	---	1	(2/)	--	---	(2/)
Mustards	2	--	--	--	2	2	65	--	---	--	---	65
Oaks	2	--	1	1	--	1	5	1	10	--	---	8
Oat, wild	1	--	--	--	1	1	80	--	---	--	---	80
Panicum	1	--	--	--	1	--	---	1	30	--	---	30
Parsnip, wild	1 3/	--	1	--	--	--	---	--	---	--	---	---
Paspalums	1	--	--	--	1	--	---	1	30	--	---	30
Pigweeds	2	--	--	1	1	2	55	--	---	--	---	55

See footnotes at end of table.

Table 181.--Noncropland: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968--continued

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
		NE	NC	S	W	Stationary		Up		Down		
						No.	Area	No.	Area	No.	Area	
							Percent		Percent		Percent	Percent
Pines	1	--	--	1	--	1	5	--	---	--	---	5
Poison ivy	3	2	1	--	--	2	45 2/	1	30	--	---	38 2/
Popular	1	1	--	--	--	--	---	1	40	--	---	40
*Quackgrass	7	3	3	--	1	5	32	1	35	1	60	37
*Ragweeds	8 3/	1	5	2	--	6	60 2/	1	(2/)	--	---	60 2/
Reed	1	1	--	--	--	1	35	--	---	--	---	35
Rose	3	1	--	--	2	1	25	2	18	--	---	20
Saltcedar	1	--	--	--	1	--	---	--	---	1	2	2
Sassafras	1	--	--	1	--	1	10	--	---	--	---	10
Spurge, leafy	3	--	1	--	2	1	15	2	16	--	---	16
Sumac	3	1	--	2	--	3	45	--	---	--	---	45
*Sunflowers	4 3/	--	3	--	1	3	20 2/	--	---	--	---	20 2/
Sweetfern	1	1	--	--	--	1	30	--	---	--	---	30
Sweetgum	1	--	--	1	--	1	30	--	---	--	---	30
*Thistle, Russian	8	--	2	2	4	5	37	2	40 2/	1	(2/)	38 2/
*Thistles	18	3	7	1	7	8	22 2/	9	16 2/	1	(2/)	19 2/
Toadflax, yellow	1	--	--	--	1	--	---	1	(2/)	--	---	ne 2/
Tree-of-heaven	1	1	--	--	--	1	25	--	---	--	---	25
Trumpetcreeper	1	--	--	1	--	--	---	1	30	--	---	30
Vines	1	--	--	1	--	--	---	1	60	--	---	60
Waterhemp	1	--	1	--	--	1	(2/)	--	---	--	---	(2/)
Whitehorn	1	1	--	--	--	1	30	--	---	--	---	---
Whitetop	2	--	--	--	2	--	---	1	20	1	3	12
Willows	2	--	--	1	1	1	1	1	40	--	---	20
Woody plants	2	--	--	2	--	1	50	1	60	--	---	55

1/ Percentage figures for each trend are averages of those reports for which estimates were given for extent of area infested; other reports included in the number of reports.

2/ No estimates reported for weeds listed in Illinois, Iowa, Kansas, Nebraska, Texas, and Idaho.

3/ Weeds reported in Pennsylvania and Missouri not classified by trend and no estimate given of extent; included in regional and total frequency counts only.

Table 182.--Noncropland: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1968

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Ash	30	Sta.	Brambles	30	Up	Ivy, poison	30	Up	Maple, red	30	Sta.	Sumac	25	Sta.
Delaware	Dogbane hemp	5	Up	Milkweed, broadleaf	5	Up	----------	--	--	----------	--	--	----------	--	--
Maryland	Johnsongrass	10	Up	Quackgrass	5	Sta.	Thistle, Canada	10	Up	----------	--	--	----------	--	--
New Hampshire	Bindweed	20	Sta.	Bracken, fern	30	Sta.	Popular	40	Up	Quackgrass	60	Down	Sweet, fern	30	Sta.
New Jersey	Brush, mixed	60	Sta.	Ivy, poison	45	Sta.	Knotweed, Japanese	20	Up	Reed	35	Sta.	Tree-of-heaven	25	Sta.
Pennsylvania	Brush	--	--	----------	--	--	----------	--	--	----------	--	--	----------	--	--
Vermont	Brush	10	Sta.	Goldenrod	10	Sta.	Quackgrass	50	Sta.	Ragweed	50	Sta.	Thistles	10	Sta.
West Virginia	Greenbrier	65	Up	Ironweed	50	Sta.	Rose, multiflora	20	Up	Thistles	35	Up	Whitethorn	30	Sta.
North Central:															
Illinois	Bindweed, field	--	Up	Bouncingbet	--	Up	Milkweed, climbing	--	Up	----------	--	--	----------	--	--
Indiana	Horseweed	--	Sta.	Ivy, poison	--	Sta.	Johnsongrass	6	Sta.	Quackgrass	6	Sta.	Thistle, Canada	--	Sta.
Iowa	Brush, mixed	--	Sta.	Hemp	--	Sta.	Ragweed, giant	--	Sta.	----------	--	--	----------	--	--
Kansas	Bindweed, field	--	Up	Johnsongrass	--	Up	Thistle, musk	--	Up	----------	--	--	----------	--	--
Minnesota	Oak, brush	5	Sta.	Quackgrass	80	Sta.	Ragweed	50	Sta.	Thistle, Canada	50	Sta.	Thistle, Russian	20	Sta.
Missouri	Johnsongrass	--	--	Parsnip, wild	--	--	Ragweed, giant	--	--	Sunflower	--	--	----------	--	--
Nebraska	Hemp	--	Sta.	Milkweed, common	--	Up	Ragweed, giant	--	Sta.	Sunflower	--	Sta.	Waterhemp	--	Sta.
North Dakota	Goldenrod	20	Sta.	Spurge, leafy	30	Up	Sunflower, maximilian	25	Sta.	Thistle, Canada	15	Up	Thistle, Flodman	20	Sta.
Ohio	Crabgrass	40	Sta.	Foxtails	50	Sta.	Quackgrass	20	Sta.	Ragweed	60	Sta.	Thistle, Canada	35	Sta.
South Dakota	Bindweed, field	15	Sta.	Kochia	25	Sta.	Lambsquarters	25	Sta.	Thistle, Canada	10	Sta.	Thistle, Russian	25	Sta.
Southern:															
Arkansas	Broomsedge	80	Sta.	Dock, curly	10	Down	Johnsongrass	30	Down	Pigweed	60	Sta.	Ragweed	80	Sta.
Georgia	Bermudagrass	70	Up	Blackberry	20	Up	Honeysuckle	60	Up	Johnsongrass	40	Up	Trumpetcreeper	30	Up
North Carolina	Bermudagrass	70	Sta.	Briars	10	Sta.	Honeysuckle	20	Sta.	Kudzu	30	Up	Woody plants	60	Up
Oklahoma	Bermudagrass	80	Sta.	Elm	15	Up	Johnsongrass	90	Sta.	Oak	10	Up	Thistle, Russian	40	Up
South Carolina	Grasses, annual	50	Sta.	Sweetgum	30	Sta.	Vines	60	Up	Willow	40	Up	Woody plants	40	Up
Tennessee	Briars	95	Sta.	Broomsedge	90	Sta.	Johnsongrass	30	Up	Sumac	95	Sta.	Thistles	30	Up
Texas	Brush, mixed	--	Up	Johnsongrass	--	Up	Mesquite	--	Up	Ragweed, giant	--	Up	Thistle, Russian	--	Up
Virginia	Locust, black	10	Sta.	Maples	10	Sta.	Pines	5	Sta.	Sassafras	10	Sta.	Sumac	5	Sta.
Western:															
Arizona	Bermudagrass	20	Sta.	Johnsongrass	10	Sta.	Mustards	70	Sta.	Pigweed	50	Sta.	Thistle, Russian	70	Sta.
California	Bermudagrass	70	Up	Bindweed, field	60	Up	Blackberry, Himalayan	20	Up	Johnsongrass	70	Sta.	Salt, [illegible]	--	--
Idaho	Brush	--	Down	Mullein	--	Up	Thistle, Canada	--	Down	Thistle, Russian	--	Down	Toadflax, yellow	--	Up
Montana	Brome, downy	5	Sta.	Knapweed, spotted	2	Up	Spurge, leafy	2	Up	Thistle, Canada	5	Up	Whitetop	3	Down
Nevada	Knapweed, Russian	20	Up	Rose	25	Sta.	Thistle, Canada	15	Sta.	Whitetop	20	Up	----------	--	--
New Mexico	Barnyardgrass	20	Sta.	Johnsongrass	30	Down	Kochia	20	Up	Saltcedar	2	Down	Sunflowers	15	Sta.
Oregon	Alder	5	Up	Berries, wild	5	Up	Thistle, Canada	1	Up	Thistle, Russian	10	Sta.	Willow	1	Sta.
Utah	Burdock	20	Up	Cocklebur	25	Up	Quackgrass	35	Up	Rose	15	Up	Thistle, Canada	25	Up
Washington	Brome, downy	60	Sta.	Lettuce, prickly	60	Sta.	Mustard, tumble	60	Sta.	Thistle, Canada	10	Up	Thistle, Russian	60	Sta.
Wyoming	Cress, hoary	15	Sta.	Knapweed, Russian	15	Sta.	Milkweed, showy	10	Sta.	Spurge, leafy	15	Sta.	Thistle, Canada	15	Sta.
Hawaii	Fern	20	Up	Guava	25	Sta.	Leadtree	20	Sta.	Panicum	30	Up	Pasvalum	30	Up

1/ Sta., stationary.

AQUATIC AREAS

(See General Limitations)

The aquatic areas reported include farm ponds, lakes, reservoirs, earth tanks, and irrigation and drainage waterways. All of these areas are subject to varying degrees of weed infestation. Twenty States reported aquatic-weed infestations totaling 216,000 acres--an area almost 2.6 times that reported for 1965. This greater area is explained in part by the greater number of States now reporting treatment in aquatic areas (13 States in 1965). However, it also reflects actual increases in weed-infested areas and the greater attention devoted to aquatic weeds and water resources.

Of the total acres treated for control of aquatic weeds during 1968, only 17,000 were treated preemergence. The remaining acreage was treated postemergence. The average treatment cost per acre for 1968 was $20.50, as compared with $22.88 for 1965. The estimated costs varied widely from State to State and from region to region. Seven Southern States reported that 57 percent of the total weed-infested acreage had been treated. The more moderate climate and the rapid spreading of introduced species of aquatic weeds serve to make these States special problem areas.

Farmers treated 25 percent of the infested areas, while custom operators treated the remaining 75 percent. Slightly more than half of the States reporting believed that the effectiveness of the herbicides used was good. Most of the remainder reported the effectiveness as fair, although one State reported the effectiveness of postemergence herbicides as poor.

The need for improved herbicides was listed as urgent by seven States, while the remaining States reported some need for improvement. This response was very similar to that obtained in 1965. Herbicide users apparently felt that, although present herbicides were effective, there was much room for improvement. Treatment costs are certain to be a factor in the user's judgment. Only five of 20 States reported persistence problems associated with the use of herbicides in aquatic sites. This is in contrast to seven of 13 States reporting persistence problems in 1965, and may reflect increased experience and confidence in the use of herbicides (tables 1 through 7, 183, and 184).

Thirty-three States reported a total of 35 different aquatic species or groups of species as being problems in aquatic sites. Algae and pondweeds were cited most often as problem weeds, being listed 44 times in a total of 150 citations. Cattail was third in importance with 17 citations. Seventy-two instances were listed in which the intensity trend of weed infestations was up, nine in which the weed infestations were down, and 67 in which the areas infested remained static (tables 185 and 186).

Table 183.--Aquatic areas: Estimated extent and cost of chemical weed control, by States and geographic regions, 1968

State and region	Acres treated			Average cost per acre 1/			Acreage treated by--	
	Pre-emergence	Post-emergence	Pre- + post-emergence	Pre-emergence	Post-emergence	Pre- + post-emergence	Farmers	Custom operators
	1,000 acres	1,000 acres	1,000 acres	Dollars	Dollars	Dollars	Percent	Percent
Connecticut	---	0.4	---	---	6.00	---	70	30
New Jersey	---	.5	---	---	6.00	---	85	15
Pennsylvania	1	6	---	6.00	25.00	---	70	30
Northeastern	1.0	6.9	---	6.00	22.52	---	71	29
Illinois	10	8	---	150.00	10.00	---	10	90
Iowa	2	.5	---	20.00	2.50	---	80	20
Minnesota	---	50	---	---	15.00	---	25	75
Wisconsin	2	---	---	50.00	---	---	25	75
North Central	14.0	58.5	---	117.14	14.21	---	23	77
Arkansas	---	3	---	---	15.00	---	100	---
Florida	---	5	---	---	9.00	---	10	90
Georgia	---	5	---	---	25.00	---	90	10
Mississippi	---	5	---	---	10.00	---	100	---
Tennessee	---	.1	---	---	15.00	---	---	100
Texas	---	100	---	---	10.00	---	10	90
Virginia	2	3	---	40.00	40.00	---	30	70
Southern	2.0	121.1	---	40.00	11.45	---	20	80
California	.2	3	---	80.00	35.00	---	80	20
Montana	---	2	---	---	15.00	---	50	50
Utah	---	2/	---	---	20.00	---	20	80
Washington	---	2	---	---	20.00	---	10	90
Wyoming	---	3	---	---	30.00	---	20	80
Hawaii	---	2	---	---	20.00	---	100	---
Western	.2	12.0	---	80.00	25.42	---	52	48
United States	17.2	198.5	---	101.28	13.50	---	25	75

1/ Includes herbicide equipment and labor for treatment made by farmers. Represents cost of herbicide custom applications and/or cost of farmer-applied herbicides. Regional and United States averages are for acreages on which costs were reported.

2/ Less than 50 acres.

Table 184.--Aquatic areas: Estimated usage trend of chemical weed control, need for better herbicides, and residue problems, by States and geographic regions, 1968

State and region	Effectiveness of herbicides			Herbicides usage trend 1/	Need for better herbicides	Persistence Problem	
	Pre-emergence	Post-emergence	Pre- + post-emergence			Indication of problem	Percent of treated acres
Connecticut	---	Good	---	Sta.	Urgent	Yes	15
New Jersey	---	Good	---	Up	Some	No	---
Pennsylvania	Good	Good	---	Up	Some	No	---
Northeastern	1-Good	3-Good	---	2-Up 1-Sta.	1-Urgent 2-Some	1-Yes 2-No	1
Illinois	Good	Good	---	Up	Some	No	---
Iowa	Fair	Fair	---	Up	Some	No	---
Minnesota	---	Fair	---	Up	Some	Yes	10
Wisconsin	Good	---	---	Up	Some	No	---
North Central	2-Good 1-Fair	1-Good 2-Fair	---	4-Up	4-Some	1-Yes 3-No	7
Arkansas	---	Good	---	Up	Some	No	---
Florida	---	Fair	---	Down	Some	Yes	---
Georgia	---	Good	---	Up	Some	No	---
Mississippi	---	Fair	---	Up	Urgent	No	---
Tennessee	---	Poor	---	Up	Some	No	---
Texas	---	Good	---	Up	Some	No	---
Virginia	Fair	Fair	---	Up	Urgent	No	---
Southern	1-Fair	3-Good 3-Fair 1-Poor	---	6-Up 1-Down	2-Urgent 5-Some	1-Yes 6-No	---
California	Good	Fair	---	Up	Urgent	Yes	12
Montana	---	Fair	---	Up	Some	No	---
Utah	---	Fair	---	Up	Urgent	No	---
Washington	---	Good	---	Up	Urgent	Yes	---
Wyoming	---	Good	---	Up	Some	No	---
Hawaii	---	Fair	---	Sta.	Urgent	No	---
Western	1-Good	2-Good 4-Fair	---	5-Up 1-Sta.	4-Urgent 2-Some	2-Yes 4-No	3
United States	4-Good 2-Fair	9-Good 9-Fair 1-Poor	---	17-Up 2-Sta. 1-Down	7-Urgent 13-Some	5-Yes 15-No	3

1/ Sta., stationary.

Table 185.--Aquatic areas: Weeds listed among the five most important in reporting States, reporting frequencies by regions and infestation trends, and estimates of infested acreages, 1968

[Asterisks (*) designate the 10 weeds reported most frequently in aquatic areas]

Weed or complex	Number of reports	Reports by region				Infestation trend						Total area
						Stationary		Up		Down		
		NE	NC	S	W	No.	Area	No.	Area	No.	Area	
							Percent		Percent		Percent	Percent
*Algae	21	4	2	8	7	10	41	9	44	2	1	39
*Alligatorweed	5	--	--	5	--	1	20	4	36	--	---	33
Barnyardgrass	1	1	--	--	--	--	---	1	20	--	---	20
Bladderwort	2	1	--	1	--	--	---	2	52	--	---	52
*Bulrushes	4	--	--	--	4	3	28	--	---	1	1	19
Burred, water	1	1	--	--	--	1	10	--	---	--	---	10
Buttercup, water	1	--	--	--	1	1	25	--	---	--	---	25
Cabomba	2	1	1	--	--	2	18	--	---	--	---	18
Canarygrass, reed	3	--	--	--	3	--	---	3	6	--	---	6
*Cattails	17	2	1	5	9	10	18	3	1	4	14	15
Chara	4	--	1	1	2	2	10	2	16	--	---	13
*Coontail	8	--	2	4	--	4	38	2	(1/)	--	---	38
*Duckweed	10	4	1	5	--	2	22	8	38	--	---	34
*Elodea	8	2	3	2	1	2	30	6	31	--	---	31
Horsetail	1	1	--	--	--	--	---	--	---	-	20	20
Hydrilla	1	--	--	1	--	--	---	1	10	--	---	10
Naiads	2	--	1	1	--	--	---	2	20	--	---	20
Paragrass	1	--	--	--	1	--	---	1	25	--	---	25
Parrotfeather	2	--	--	1	1	--	---	2	22	--	---	22
*Pondweeds	23	4	6	3	10	11	52	12	33	--	---	42
Rushes	1	--	--	1	--	1	15	--	---	--	---	15
Saltcedar	1	--	--	--	1	--	---	1	20	--	---	20
Sedges	1	--	--	--	1	1	20	--	---	--	---	20
Smartweed, water	1	1	--	--	--	1	5	--	---	--	---	5
Spanishneedles	1	1	--	--	--	--	---	1	10	--	---	10
Spatterdock	3	1	1	1	--	2	15	1	50	--	---	27
Vallisneria	2	2	--	--	--	2	22	--	---	--	---	22
Watercress	1	--	--	--	1	1	(1/)	--	---	--	---	(1/)
Waterhyacinth	3	--	--	2	1	2	30	1	70	--	---	43
*Waterlilies	7	1	1	5	--	4	25	2	30	1	(1/)	27
*Watermilfoils	10	3	4	2	1	3	60	7	28	--	---	33
Waterprimrose	1	--	--	1	--	1	20	--	---	--	---	20
Watershield	1	--	--	1	--	--	---	1	(1/)	--	---	(1/)
Waterstargrass	1	--	--	--	1	1	20	--	---	--	---	20
Willows	1	--	--	--	1	--	---	--	---	1	(1/)	(1/)

1/ Percentage figures for each trend are averages of the individual estimates reported for the extent of area infested; where estimates were not reported, weeds are included in frequency counts only.

Table 186.--Aquatic areas: Five most important weeds listed alphabetically by States within regions, acreage infested, and infestation trend, 1963

Region and State	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/	Weed	Infestation Acres	Trend 1/
		Pct.			Pct.			Pct.			Pct.			Pct.	
Northeastern:															
Connecticut	Algae	65	Up	Duckweed	30	Up	Elodea	45	Up	Pondweed	45	Up	Watermilfoil	50	Up
New Hampshire	Algae	40	Sta.	Cattail	20	Down	Horsetail	20	Down	Pondweed	30	Up	Waterlily	30	Sta.
New Jersey	Burreed, water	10	Sta.	Cabomba	30	Sta.	Spatterdock	50	Up	Vallisneria	15	Sta.	Watermilfoil	60	Sta.
Pennsylvania	Algae	50	Up	Duckweed	35	Up	Elodea	40	Up	Pondweed	45	Up	Watermilfoil	30	Up
Rhode Island	Bladderwort	98	Up	----------	--	--	----------	--	--	----------	--	--	----------	--	--
Vermont	Algae	60	Up	Cattail	20	Sta.	Duckweed	20	Sta.	Pondweed	40	Sta.	Vallisneria	30	Sta.
West Virginia	Barnyardgrass	20	Up	Duckweed, common	100	Up	Smartweed, water	5	Sta.	Spanishneedles	10	Up	----------	--	--
North Central:															
Illinois	Cabomba	5	Sta.	Chara	30	Up	Naiad, southern	20	Up	Pondweed, bushy	20	Up	Spatterdock	5	Sta.
Indiana	Algae	40	Sta.	Coontail	55	Sta.	Duckweed	50	Up	Pondweed	--	Sta.	Watermilfoil	--	Sta.
Iowa	Elodea	100	Up	Pondweed	100	Up	Watermilfoil	100	Up	----------	--	--	----------	--	--
Minnesota 2/	Algae, bluegreen	--	Up	Cattail	--	Sta.	Coontail	--	Sta.	Elodea	--	Sta.	Pondweed, sago	--	Sta.
Wisconsin	Elodea	--	Up	Pondweed, curlyleaf	--	Up	Pondweed, sago	--	Up	Waterlily, white	--	Up	Watermilfoil, Northern	--	Up
Southern:															
Arkansas	Algae	--	Down	Cattail	--	Down	Coontail	--	Up	Waterlily	--	Sta.	Watershield	--	Up
Florida	Alligatorweed	50	Up	Bladderwort 3/	5	Up	Elodea	10	Up	Hydrilla	10	Up	Waterhyacinth	70	Up
Georgia	Algae	20	Sta.	Cattail	20	Sta.	Duckweed	20	Up	Parrotfeather	30	Up	Waterlily	30	Up
Kentucky	Algae	--	Up	Coontail	--	Up	Duckweed	--	Up	Pondweed	--	Up	Waterlily	--	Down
Louisiana	Alligatorweed	30	Up	Coontail	20	Sta.	Spatterdock	25	Sta.	Waterhyacinth	40	Sta.	Waterlily	20	Sta.
North Carolina	Algae	40	Sta.	Alligatorweed	30	Up	Duckweed	25	Up	Naiads	20	Up	Watermilfoil	30	Up
Oklahoma	Algae	--	Sta.	Cattail	--	Sta.	Coontail	--	Sta.	Pondweed	--	Sta.	Waterlily	--	Sta.
South Carolina	Algae	30	Up	Alligatorweed	35	Up	Cattail	30	Sta.	Duckweed	25	Sta.	Elodea	30	Sta.
Texas	Algae	30	Sta.	Alligatorweed	20	Sta.	Cattail	10	Sta.	Rushes	15	Sta.	Waterprimrose	20	Sta.
Virginia	Algae	30	Up	Chara	2	Up	Duckweed	5	Up	Pondweed	10	Up	Watermilfoil	10	Up
Western:															
Arizona	Algae	90	Sta.	Cattail	15	Sta.	Chara	10	Sta.	Pondweed, sago	70	Sta.	Waterstargrass	20	Sta.
California	Bulrush, hardstem	15	Sta.	Cattail	20	Sta.	Pondweed, American	60	Sta.	Pondweed, sago	75	Up	Watermilfoil	20	Up
Idaho	Algae	--	Sta.	Canarygrass, reed	--	Up	Cattail	--	Up	Pondweed	--	Sta.	Watercress	--	Sta.
Montana 4/	Algae	--	Sta.	Bulrushes	--	Sta.	Cattail	--	Sta.	Pondweed, leafy	--	Sta.	Pondweed, sago	--	Sta.
Nevada	Saltcedar	20	Up	----------	--	--	----------	--	--	----------	--	--	----------	--	--
New Mexico	Algae, green	1	Down	Bulrush, softstem	1	Down	Cattail	1	Down	----------	--	--	----------	--	--
Oregon	Canarygrass, reed	3	Up	Cattail	1	Up	Pondweed, American	1	Up	----------	--	--	----------	--	--
Utah	Algae	25	Sta.	Bulrush	40	Sta.	Buttercup, water	25	Sta.	Cattails	10	Sta.	Pondweed	40	Sta.
Washington	Algae	--	Up	Cattail	--	Up	Pondweed	--	Up	----------	--	--	----------	--	--
Wyoming	Canarygrass, reed	10	Up	Cattail	20	Down	Chara	10	Sta.	Pondweed, sago	50	Sta.	Sedges	20	Sta.
Hawaii	Algae	30	Up	Elodea	30	Up	Paragrass	25	Up	Parrotfeather	15	Up	Waterhyacinth	20	Sta.

1/ Sta., stationary.
2/ Minnesota also reported: Watermilfoil -- Sta.
3/ Bladderwort, coontail, naiad.
4/ Montana also reported: Willow -- Down.

APPENDIX

Weeds Listed Among the Five Most Important in the Various Crop and Land-use Areas Surveyed

Most weeds listed in the 1968 Survey were reported by standardized common names that had been approved by the Terminology Committee, Weed Science Society of America. Colloquial names were changed to standardized common names in some instances. Each weed has been listed alphabetically by common or colloquial name and is identified by the scientific name or nomenclature judged most accurate by botanists and weed specialists of the U.S. Department of Agriculture.

COMMON NAME	SCIENTIFIC NAME
A'alii	Dodonaea eriocarpa Sm.
Alder	Alnus spp.
Alexandergrass	Brachiaria plantaginea (Link) A. Hitchc.
Alfalfa (crop)	Medicago sativa L.
Algae	a complex
Algae, bluegreen	a complex
Algae, green	a complex
Alligatorweed	Alternanthera philoxeroides (Mart.) Griseb.
Alyssum, hoary	Berteroa incana (L.) DC.
Amaranth(s)	Amaranthus spp.
Amaranth, spiny	Amaranthus spinosus L.
Annuals, winter	a complex
Anoda, spurred	Anoda cristata (L.) Schlecht.
Apple-of-Peru	Nicandra physalodes (L.) Pers.
Arrowgrass	Triglochin spp.
Ash	Fraxinus spp.
Aspen, bigtooth	Populus grandidentata Michx.
Aster, white heath	Aster pilosus Willd.
Bahiagrass	Paspalum notatum Flügge
Balsamapple, pear	Momordica charantia L.
Balsamroot, arrowleaf	Balsamorhiza sagittata Nutt.
Barley (crop)	Hordeum vulgare L.
Barley, foxtail	Hordeum jubatum L.
Barley, little	Hordeum pusillum Nutt.
Barley, squirreltail	see foxtail barley
Barley, wild	Hordeum leporinum Link
Barnyardgrass	Echinochloa crus-galli (L.) Beauv.
Baronetgrass	Echinochloa sp.
Bearmat	Chamaebatia foliolosa Benth.
Bedstraw(s)	Galium spp.
Beggarweed	Desmodium spp.
Beggarweed, Florida	Desmodium tortuosum (Sw.) DC.
Beggarweed, threeflower-	Desmodium triflorum (L.) DC.

COMMON NAME	SCIENTIFIC NAME
Bellflower	Campanula spp.
Bellflower, creeping	Campanula rapunculcides L.
Bentgrass	Agrostis spp.
Bentgrass, creeping	Agrostis stolonifera L.
Bentgrass, rough	Agrostis scabra Willd.
Bentgrass, wind	Agrostis spica-venti L.
Bermudagrass	Cynodon dactylon (L.) Pers.
Berries, wild	a complex
Betony, Florida	Stachys floridana Shuttlew.
Bindweed	Convolvulus spp.
Bindweed, field	Convolvulus arvensis L.
Bindweed, hedge	Convolvulus sepium L.
Bittercress	Cardamine spp.
Blackberry	Rubus spp.
Blackberry, Himalaya	Rubus procerus P. J. Muell.
Blackbush	Coleogyne ramosissima Torr.
Blackgum	Nyssa sylvatica Marsh.
Bladderwort	Utricularia spp.
Bluegrass	Poa spp.
Bluegrass, annual	Poa annua L.
Bluegrass, Kentucky	Poa pratensis L.
Bouncingbet	Saponaria officinalis L.
Bracken	Pteridium aquilinum (L.) Kuhn
Brambles	a complex
Briars	a complex
Brome(s)	Bromus spp.
Brome, downy	Bromus tectorum L.
Brome, Japanese	Bromus japonicus Thunb.
Brome, ripgut	Bromus rigidus Roth
Brome, smooth	Bromus inermis Leyss.
Broom, Scotch	Cytisus scoparius (L.) Link
Broomsedge	Andropogon virginicus L.
Broomweed	Gutierrezia spp.
Brush	a complex
Brush, mixed	a complex
Buckbrush	Symphoricarpos orbiculatus Moench
Buckwheat, wild	Polygonum convolvulus L.
Bullnettle	Cnidoscolus stimulosus (Michx.) Gray
Bulrush(es)	Scirpus spp.
Bulrush, hardstem	Scirpus acutus Muhl.
Bulrush, roughseed	Scirpus mucronatus L.
Bulrush, softstem	Scirpus validus Vahl
Burclover	Medicago spp.
Burcucumber	Sicyos angulatus L.
Burdock	Arctium spp.
Burreed, water	Sparganium fluctuans (Morong) Robinson
Buttercup	Ranunculus spp.
Buttercup, bulbous	Ranunculus bulbosus L.
Buttercup, tall	Ranunculus acris L.
Buttercup, testiculate	Ranunculus testiculatus Crantz

COMMON NAME	SCIENTIFIC NAME
Cabomba	Cabomba caroliniana Gray
Cactus	a complex
Camphorweed	Heterotheca subaxillaris (Lam.) Britt. & Rusby
Canarygrass, reed	Phalaris arundinacea L.
Caraway	Carum carvi L.
Carpetgrass	Axonopus affinis Chase
Carpetweed	Mollugo verticillata L.
Carrot, wild	Daucus carota L.
Catchfly, nightflowering	Silene noctiflora L.
Cattail(s)	Typha spp.
Cattail, common	Typha latifolia L.
Ceanothus, wedgeleaf	Ceanothus cuneatus (Hook.) Nutt.
Chamise	Adenostoma fasciculatum Hook. & Arn.
Chamomile, corn	Anthemis arvensis L.
Chara	Chara spp.
Cheat	Bromus seculinus L.
Cheeseweed	see little mallow (Malva parviflora)
Chess, soft	Bromus mollis L.
Chickweed(s)	Stellaria-Cerastium-Holosteum spp.
Chickweed, common	Stellaria media (L.) Cyrillo
Chickweed, field	Cerastium arvense L.
Chickweed, mouseear	Cerastium vulgatum L.
Chicory	Cichorium intybus L.
Chokeberry, black	Pyrus melonocarpa (Michx.) Willd.
Cholla	Opuntia spp.
Cinquefoil	Potentilla spp.
Clover(s)	Trifolium spp.
Clover, white	Trifolium repens L.
Clubmoss	Lycopodiaceae (Pteridophytes)
Cockle	Agrostemma-Vaccaria-Lychnis spp.
Cockle, corn	Agrostemma githago L.
Cockle, cow	Vaccaria segetalis (Neck.) Garcke
Cockle, white	Lychnis alba Mill.
Cocklebur	Xanthium spp.
Cocklebur, common	Xanthium pensylvanicum Wallr.
Cocklebur, spiny	Xanthium spinosum L.
Coontail	Ceratophyllum spp.
Copperleaf	Acalypha spp.
Copperleaf, Virginia	Acalypha virginica L.
Cottonwood	Populus spp.
Crabgrass	Digitaria spp.
Crabgrass, Henry	Digitaria adscendens (H.B.K.) Henr.
Crabgrass, large	Digitaria sanguinalis (L.) Scop.
Cranesbill	Geranium spp.
Creeper, Virginia	Parthenocissus quinquefolia (L.) Planch
Creosotebush	Larrea tridentata (DC.) Coville
Cress, hoary	Cardaria draba (L.) Desv.
Crotalaria	Crotalaria spp.
Croton	Croton spp.
Crowfootgrass	Dactyloctenium aegyptium (L.) Richter

COMMON NAME	SCIENTIFIC NAME
Cypressweed	see dogfennel (*Eupatorium capillifolium*)
Daisy	*Chrysanthemum* spp.
Daisy, English	*Bellis perennis* L.
Daisy, oxeye	*Chrysanthemum leucanthemum* L.
Dalea, broom	*Dalea scoparia* A. Gray
Dallisgrass	*Paspalum dilatatum* Poir.
Dandelion(s)	*Taraxacum* spp.
Dandelion, common	*Taraxacum officinale* Weber
Darnel	*Lolium temulentum* L.
Dayflower	*Commelina* sp.
Deathcamas	*Zigadenus* spp.
Dewberries	*Rubus* spp.
Dock	*Rumex* spp.
Dock, curly	*Rumex crispus* L.
Dodder	*Cuscuta* spp.
Dodder, field	*Cuscuta campestris* Yunck.
Dogbane	*Apocynum* spp.
Dogbane, hemp	*Apocynum cannabinum* L.
Dogfennel	*Eupatorium capillifolium* (Lam.) Small
Dogtail, crested	*Cynosurus cristatus* L.
Dropseed	*Sporobolus* spp.
Dropseed, Indian	*Sporobolus diander* (Retz.) Beauv.
Ducksalad	*Heteranthera limosa* (Sw.) Willd.
Duckweed	*Lemna* spp.
Duckweed, common	*Lemna minor* L.
Elm	*Ulmus* spp.
Elodea	*Elodea canadensis* Michx.
Eupatorium, late	*Eupatorium serotinum* Michx.
Eupatorium, river	*Eupatorium riparium* Regel.
Eveningprimrose	*Oenothera* spp.
Eveningprimrose, cutleaf	*Oenothera laciniata* Hill
Fern(s)	a complex
Fern, feathery	*Dryopteris* sp.
Fern, sensitive	*Onoclea sensibilis* L.
Fescue(s)	*Festuca* spp.
Fescue, rattail	*Festuca myuros* L.
Fescue, tall	*Festuca elatior* L.
Fiddleneck	*Amsinckia* spp.
Fiddleneck, coast	*Amsinckia intermedia* Fisch. & Mey.
Fiddleneck, Douglas	*Amsinckia douglasiana* A. DC.
Filaree	*Erodium* spp.
Fingergrass, feather	*Chloris virgata* Swartz
Fingergrass, swollen	*Chloris barbata* Swartz
Firebush	*Myrica faya* Ait.
Flatsedge(s)	*Cyperus* spp.
Flaveria	*Flaveria repanda* Lag.

COMMON NAME	SCIENTIFIC NAME
Fleabane(s)	Erigeron spp.
Fleabane, daisy	see horseweed (Conyza canadensis)
Fleabane, rough	Erigeron strigosus Muhl.
Flixweed	Descurainia sophia (L.) Webb.
Fountaingrass	Pennisetum setaceum (Forsk.) Chiov.
Foxtail(s)	Setaria spp.
Foxtail, bristly	Setaria verticillata (L.) Beauv.
Foxtail, giant	Setaria faberi Herrm.
Foxtail, green	Setaria viridis (L.) Beauv.
Foxtail, meadow	Alopecurus pratensis L.
Foxtail, yellow	Setaria lutescens (Weigel) Hubb.
Foxtailgrass, West Indian	Andropogon bicornis L.
Galinsoga	Galinsoga spp.
Galinsoga, smallflower	Galinsoga parviflora Cav.
Gallberry	Ilex glabra (L.) Gray
Garlic, wild	Allium vineale L.
Geranium, Carolina	Geranium carolinianum L.
Goatgrass	Aegilops spp.
Goatgrass, barb	Aegilops triuncialis L.
Goatweed	Croton sp.
Goldenrod(s)	Solidago spp.
Goosefoot(s)	Chenopodium spp.
Goosefoot, nettleleaf	Chenopodium murale L.
Goosegrass	Eleusine indica (L.) Gaertn.
Gorse	Ulex europaeus L.
Grasses (sod)	a complex
Grasses, annual	a complex
Grasses, hay	a complex
Grasses, perennial	a complex
Greasewood	Sarcobatus vermiculatus (Hook.) Torr.
Greenbrier(s)	Smilax spp.
Gromwell	Lithospermum spp.
Gromwell, corn	Lithospermum arvense L.
Groundcherry	Physalis spp.
Groundcherry, Wright	Physalis wrightii Gray
Groundsel	Senecio spp.
Groundsel, common	Senecio vulgaris L.
Guava	Psidium spp.
Guineagrass	Panicum maximum Jacq.
Gumweed	Grindelia squarrosa (Pursh) Dunal
Halogeton	Halogeton glomeratus (M. Bieb.) C. A. Mey.
Hardhack	Spiraea tomentosa L.
Hardwoods	a complex
Hawkweed	Hieracium spp.
Hellebore	Veratrum spp.
Hellebore, western false-	Veratrum californicum Durand
Hemp	Cannabis sativa L.

COMMON NAME	SCIENTIFIC NAME
Hempnettle	Galeopsis tetrahit L.
Henbit	Lamium amplexicaule L.
Hickory	Carya spp.
Honeysuckle	Lonicera spp.
Horsebrush, smooth	Tetradymia sp.
Horsenettle	Solanum carolinense L.
Horsetail	Equisetum spp.
Horseweed	Conyza canadensis (L.) Cronq.
Huisache	Acacia farnesiana (L.) Willd.
Hydrilla	Hydrilla verticillata Casp.
Indigo, hairy	Indigofera hirsuta L.
Iris	Iris spp.
Ironweed	Vernonia spp.
Ivy, ground	Glechoma hederacea L.
Ivy, poison	see poison ivy
Jimsonweed	Datura stramonium L.
Johnsongrass	Sorghum halepense (L.) Pers.
Jointvetch, northern	Aeschynomene virginica (L.) B.S.P.
Junglerice	Echinochloa colonum (L.) Link
Juniper(s)	Juniperus spp.
Juniper, California	Juniperus californica Carr.
Juniper, Utah	Juniperus osteosperma (Torr.) Little
Kikuyugrass	Pennisetum clandestinum Hochst.
Knapweed	Centaurea spp.
Knapweed, Russian	Centaurea repens L.
Knapweed, spotted	Centaurea maculosa Lam.
Knawel	Scleranthus annuus L.
Knotweed	Polygonum spp.
Knotweed, Japanese	Polygonum cuspidatum Sieb. & Zucc.
Knotweed, prostrate	Polygonum aviculare L.
Knotweed, silversheath	Polygonum argyrocoleon Steud.
Kochia	Kochia scoparia (L.) Schrad.
Kudzu	Pueraria lobata (Willd.) Ohwi
Kyllinga, green	Cyperus brevifolius (Rottb.) Hassk.
Ladysthumb	Polygonum persicaria L.
Lambsquarters	Chenopodium spp. (probably all C. album)
Lambsquarters, common	Chenopodium album L.
Lantana	Lantana camara L.
Larkspur(s)	Delphinium spp.
Larkspur, Geyer's	Delphinium geyeri Greene
Larkspur, low	Delphinium nelsonii Greene
Larkspur, tall	Delphinium barbeyi Huth
Laurel, sheep	Kalmia angustifolia L.
Leadtree	Leucaena leucocephala (Lam.) de Wit

COMMON NAME	SCIENTIFIC NAME
Lettuce, China	see prickly lettuce (*Lactuca serriola*)
Lettuce, prickly	*Lactuca serriola* L.
Lippia	*Lippia* spp.
Lippia, mat	*Lippia nodiflora* (L.) Michx.
Loco(s)	*Astragalus* spp.
Locust, black	*Robinia pseudoacacia* L.
Lovegrass	*Eragrostis* spp.
Lupine	*Lupinus* spp.
Mallow	*Malva* spp.
Mallow, common	*Malva neglecta* Wallr.
Mallow, dwarf	*Malva rotundiflora* L.
Mallow, little	*Malva parviflora* L.
Mallow, Venice	*Hibiscus trionum* L.
Manzanita	*Arctostaphylos* spp.
Maple(s)	*Acer* spp.
Maple, red	*Acer rubrum* L.
Marestail	*Hippuris vulgaris* L.
Mayweed	*Anthemis cotula* L.
Medic, black	*Medicago lupulina* L.
Medusahead	*Taeniatherum asperum* (Sim.) Nevski
Melastoma, Banks	*Melastoma malabathricum* L.
Mercury, three-seeded	see copperleaf (*Acalypha* spp.)
Mesquite	*Prosopis* spp.
Milkvine	*Gonolobus* spp.
Milkweed	*Asclepias* spp.
Milkweed, broadleaf	*Asclepias latifolia* (Torr.) Raf.
Milkweed, climbing	*Sarcostemma cyanchoides* Dcne.
Milkweed, common	*Asclepias syriaca* L.
Milkweed, showy	*Asclepias speciosa* Torr.
Milkweed, western whorled	*Asclepias subverticillata* (Gray) Vail
Millet	*Pennisetum-Setaria-Panicum* spp.
Millet, Texas	see Texas panicum (*Panicum texanum*)
Morningglory	*Ipomoea* spp.
Morningglory, cypressvine	Ipomoea *quamoclit* L.
Morningglory, ivyleaf	*Ipomoea hederacea* (L.) Jacq.
Morningglory, threelobe	*Ipomoea triloba* L.
Mugwort	*Artemisia vulgaris* L.
Mulesears	*Wyethia amplexicaulis* Nutt.
Mullein	*Verbascum* spp.
Mullein, common	*Verbascum thapsus* L.
Mustard(s)	a complex
Mustard, black	*Brassica nigra* (L.) Koch
Mustard, blue	*Chorispora tenella* DC.
Mustard, tumble	*Sisymbrium altissimum* L.
Mustard, wild	*Brassica kaber* (DC.) L. C. Wheeler var. *pinnatifida* (Stokes) L. C. Wheeler

COMMON NAME	SCIENTIFIC NAME
Naiad	Najas spp.
Naiad, southern	Najas guadalupensis (Spreng.) Magnus
Napiergrass	Pennisetum purpureum Schumach.
Nettle, burning	Urtica urens L.
Nettle, stinging	Urtica dioica L.
Nightshade	Solanum spp.
Nightshade, apple-of-sodom	Solanum sodomeum L.
Nightshade, black	Solanum nigrum L.
Nightshade, hairy	Solanum sarachoides Sendt.
Nightshade, silverleaf	Solanum elaeagnifolium Cav.
Nimblewill	Muhlenbergia schreberi J. F. Gmel.
Nutsedge	Cyperus spp.
Nutsedge, purple	Cyperus rotundus L.
Nutsedge, yellow	Cyperus esculentus L.
Oak(s)	Quercus spp.
Oak (brush and scrub)	Quercus spp.
Oak, blackjack	Quercus marilandica Muenchh.
Oak, blue	Quercus douglasii Hook. & Arn.
Oak, live	Quercus spp.
Oak, poison	see poison oak
Oak, post	Quercus stellata Wangenh.
Oak, southern red	Quercus falcata Michx.
Oat, wild	Avena fatua L.
Onion, wild	Allium canadense L.
Orchardgrass	Dactylis glomerata L.
Palmetto, saw	Serenoa repens (Bartr.) Small
Panicum(s)	Panicum spp.
Panicum, browntop	Panicum fasciculatum Swartz var. reticulatum (Torr.) Beal
Panicum, fall	Panicum dichotomiflorum Michx.
Panicum, Texas	Panicum texanum Buckl.
Paragrass	Brachiaria mutica (Forsk.) Stapf
Parrotfeather	Myriophyllum brasiliense Camb.
Parsnip, wild	Pastinoca sativa L.
Partridgepea	Cassia fasciculata Michx.
Paspalum(s)	Paspalum spp.
Paspalum, sour	Paspalum conjugatum Bergius
Passionflower, wingleaf	Passiflora pulchella H.B.K.
Passionfruit, banana	Passiflora mollisima (H.B.K.) Bailey
Peas, wild winter	a complex
Peavine	Lathyrus spp.
Pennycress, field	Thlaspi arvense L.
Peppertree, Brazil	Schinus terebinthifolius Raddi
Pepperweed	Lepidium spp.
Pepperweed, field	Lepidium campestre (L.) R. Br.
Pepperweed, yellowflower	Lepidium sp.
Persimmon	Diospyros spp.

COMMON NAME	SCIENTIFIC NAME
Pigweed(s)	*Amaranthus* spp.
Pigweed, redroot	*Amaranthus retroflexus* L.
Pigweed, rough	see redroot pigweed
Pine(s)	*Pinus* spp.
Pine, pinon	*Pinus edulis* Engelm.
Pineappleweed	*Matricaria matricarioides* (Less.) Porter
Pingue	*Hymenoxys richardsoni* (Hook.) Cockl. var. *floribunda* (Gray) Parker
Plantain(s)	*Plantago* spp.
Plantain, blackseed	*Plantago rugelii* Dcne.
Plantain, broadleaf	*Plantago major* L.
Plantain, buckhorn	*Plantago lanceolata* L.
Poison ivy	*Rhus radicans* L.
Poison oak	*Rhus toxicodendron* L.
Pokeweed	*Phytolacca* spp.
Pondweed(s)	*Potamogeton* spp.
Pondweed, American	*Potamogeton nodosus* Poir.
Pondweed, bushy	*Potamogeton* sp.
Pondweed, curlyleaf	*Potamogeton crispus* L.
Pondweed, leafy	*Potamogeton foliosus* Raf.
Pondweed, sago	*Potamogeton pectinatus* L.
Poorjoe	*Diodia teres* Walt.
Poplar	*Populus* spp.
Pricklypear	*Opuntia* spp.
Pukiawe	*Styphelia tameiameiae* (Cham.) F. Muell.
Puncturevine	*Tribulus terrestris* L.
Purslane	*Portulaca* spp. (probably all *P. oleracea*)
Purslane, common	*Portulaca oleracea* L.
Pusley, Florida	*Richardia scabra* L.
Quackgrass	*Agropyron repens* (L.) Beauv.
Rabbitbrush	*Chrysothamnus* spp.
Rabbitbrush, Greene	*Chrysothamnus greenei* (A. Gray) Greene
Rabbitbrush, rubber	*Chrysothamnus nauseosus* (Pall.) Britt.
Radish, wild	*Raphanus raphanistrum* L.
Ragweed	*Ambrosia* spp.
Ragweed, common	*Ambrosia artemisiifolia* L.
Ragweed, giant	*Ambrosia trifida* L.
Ragweed, lanceleaf	*Ambrosia bidentata* Michx.
Ragweed, perennial	*Ambrosia psilostachya* DC. var. *coronopifolia* (T. & F.) Farw.
Ragweed, western	*Ambrosia psilostachya* DC.
Ragwort, tansy	*Senecio jacobaea* L.
Redcedar, eastern	*Juniperus virginiana* L.
Redvine	*Brunnichia cirrhosa* Gaertn.
Reed	*Phragmites* sp.
Rescuegrass	*Bromus willdenowii* Kunth
Rhodesgrass	*Chloris gayana* Kunth

COMMON NAME	SCIENTIFIC NAME
Rice, red	Oryza sativa L.
Rocket	Eruca-Sisymbrium-Barbarea spp.
Rocket, London	Sisymbrium irio L.
Rocket, yellow	Barbarea vulgaris R. Br.
Rosarypea	Abrus sp.
Rose	Rosa spp.
Rose, Macartney	Rosa bracteata Wendl.
Rose, multiflora	Rosa multiflora Thunb.
Rush(es)	Juncus spp.
Rush, soft	Juncus effusus L.
Ryegrass	Lolium spp.
Ryegrass, Italian	Lolium multiflorum Lam.
Sagebrush(es)	Artemisia spp.
Sagebrush, big	Artemisia tridentata Nutt.
Sagebrush, fringed	Artemisia frigida Willd.
Sage, Mediterranean	Salvia aethiopis L.
Sagewort	Artemisia campestris L.
Saltcedar	Tamarix pentandra Pall.
Sandbur(s)	Cenchrus spp.
Sandbur, dune	Cenchrus tribuloides L.
Sandbur, field	Cenchrus incertus M. A. Curtis
Sandbur, southern	Cenchrus echinatus L.
Sassafras	Sassafras albidum (Nutt.) Nees
Sedge(s)	Carex spp.
Senna(s)	Cassia spp.
Sensitiveplant	Mimosa pudica L.
Sesbania, hemp	Sesbania exaltata (Raf.) Cory
Shattercane	Sorghum bicolor (L.) Moench
Shepherdspurse	Capsella bursa-pastoris (L.) Medic.
Sicklepod	Cassia obtusifolia L.
Sida	Sida spp.
Sida, prickly	Sida spinosa L.
Signalgrass	Brachiaria spp.
Signalgrass, broadleaf	Brachiaria platyphylla (Griseb.) Nash
Smartweed(s)	Polygonum spp.
Smartweed, Pennsylvania	Polygonum pensylvanicum L.
Smartweed, water	Polygonum amphibium L.
Smutgrass	Sporobolus poiretii (Roem. & Schult.) Hitchc.
Sneezeweed, bitter	Helenium amarum (Rafin.) H. Rock
Snowberry, western	Symphoricarpos occidentalis Hook.
Soapweed, small	Yucca glauca Nutt.
Sorghum (crop)	Sorghum bicolor (L.) Moench
Sorrel	Rumex spp.
Sorrel, red	Rumex acetosella L.
Sourbush	Pluchea odorata (L.) Nees
Sowthistle	Sonchus spp.
Sowthistle, annual	Sonchus oleraceus L.
Sowthistle, perennial	Sonchus arvensis L.

COMMON NAME	SCIENTIFIC NAME
Spanishneedles	Bidens bipinnata L.
Spatterdock	Nuphar advena (Ait.) Ait. f.
Speedwell(s)	Veronica spp.
Sphagnum	Sphagnum spp.
Spikerush	Eleocharis spp.
Spirea	Spiraea spp.
Sprangletop	Leptochloa spp.
Sprangletop, bearded	Leptochloa fascicularis (Lam.) Gray
Spurge(s)	Euphorbia spp.
Spurge, cypress	Euphorbia cyparissias L.
Spurge, hyssop	Euphorbia hyssopifolia L.
Spurge, leafy	Euphorbia esula L.
Spurge, prostrate	Euphorbia supina Raf.
Spurge, spotted	Euphorbia maculata L.
Spurry	Spergula spp.
Spurry, corn	Spergula arvensis L.
Stargrass, Australian	Chloris divaricata R. Br.
Star-of-Bethlehem	Ornithogalum umbellatum L.
Starthistle, tall	Centaurea sp.
Starthistle, yellow	Centaurea solstitialis L.
Starwort, little	Stellaria graminea L.
Steeplebush	see hardhack (Spiraea tomentosa)
Sumac	Rhus spp.
Sumpweed, rough	Iva ciliata Willd.
Sunflower	Helianthus spp.
Sunflower, common	Helianthus annuus L.
Sunflower, Maximilian	Helianthus maximiliani Schrad.
Sweetfern	Comptonia peregrina (L.) Coult.
Sweetgum	Liquidambar styraciflua L.
Swinecress	Coronopus didymus (L.) Smith
Switchgrass	Panicum virgatum L.
Tansy	Tanacetum vulgare L.
Tansymustard	Descurainia pinnata (Walt.) Britt.
Tansymustard, Richardson	Descurainia richardsoni (Sweet) O.E.Schulz
Tarbush	Flourensia cernua DC.
Tarweed, common	Hemizonia congesta DC.
Tasselflower, red	Emilia sonchifolia (L.) DC.
Teaweed	see sida (Sida spp.)
Thistle(s)	Cirsium-Carduus spp.
Thistle, blessed	Cnicus benedictus L.
Thistle, bull	Cirsium vulgare (Savi) Tenore
Thistle, Canada	Cirsium arvense (L.) Scop.
Thistle, Flodman	Cirsium flodmanii (Rydb.) Arthur
Thistle, Italian	Carduus pycnocephalus L.
Thistle, musk	Carduus nutans L.
Thistle, pasture	Cirsium pumilum Spreng.
Thistle, plumeless	Carduus acanthoides L.
Thistle, Russian	Salsola kali L. var. tenuifolia Tausch

COMMON NAME	SCIENTIFIC NAME
Threeawn, prairie	Aristida oligantha Michx.
Titi	Cliftonia monophylla (Lam.) Britt.
Toadflax	Linaria spp.
Toadflax, yellow	Linaria vulgaris Hill
Tree seedlings	a complex
Trumpetcreeper	Ailanthus altissima (Mill.) Swingle
Turnip, wild	Brassica campestris L.
Umbrellaplant, tall	Cyperus eragrostis Lam.
Vallisneria	Vallisneria americana Michx.
Vaseygrass	Paspalum urvillei Steud.
Velvetgrass	Holcus lanatus L.
Velvetgrass, German	Holcus mollis L.
Velvetleaf	Abutilon theophrasti Medic.
Vernalgrass, sweet	Anthoxanthum odoratum L.
Vervain	Verbena spp.
Vervain, hoary	Verbena stricta Vent.
Vetch	Vicia spp.
Vines	a complex
Waterbuttercup	Ranunculus spp.
Watercress	Nasturtium officinale R. Br.
Watergrass (complex)	a complex, mainly Echinochloa spp.
Waterhemp	Amaranthus tuberculatos (Mop.) J. Sauer
Waterhyacinth	Eichornia crassipes (Mart.) Solms
Waterlily	Nymphaea spp.
Waterlily, white	Numphaea tuberosa Paine
Watermilfoil(s)	Myriophyllum spp.
Watermilfoil, northern	Myriophyllum exalbescens Fernald
Waterprimrose	Jussiaea spp.
Watershield	Brasenia schreberi Gmel.
Waterstargrass	Heteranthera dubia (Jacq.) MacM.
Waxmyrtle	Myrica spp.
Whitebrush	Aloysia lycioides Cham.
Whitethorn	Acacia constricta Benth.
Whitetop	Cardaria pubescens (C. A. Mey.) Rollins
Willow(s)	Salix spp.
Wintercress	Barbarea verna (Mill.) Aschers
Witchgrass	Panicum capillare L.
Woodsorrel	Oxalis spp.
Woodsorrel, creeping	Oxalis corniculata L.
Woody plants	a complex
Wormwood	Artemisia spp.
Yankeeweed	Eupatorium compositifolium Walt.
Yarrow	Achillea spp.
Yarrow, common	Achillea millefolium L.
Yaupon	Ilex vomitoria Ait.

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